

COMPUTER WORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Vol. III No. 1 January 1, 1976 Price \$3.00 per copy

Appeal Warns of 'Thought Control'

WASHINGTON, D.C. — The patenting of computer programs could lead to thought-control a la George Orwell, according to the Patent Office's brief asking for a rehearing of the *Prater & Wei* case. This is the case in which the Court of Patent Appeals ruled that computer programs could be patented on the grounds that acts which could be performed manually and also performed without human intervention were patentable.

In its request the Patent Office (Continued on Page 20)

Fast Terminal Handles Up to 4 I/Os at Once

SANTA ANA, Calif. A high speed remote terminal system has been announced by Data Computer Systems. The unit, "the first fourth generation remote communication terminal," provides full remote capabilities including keyboards, card readers, printers, and punches over voice grade lines.

The unit is compatible with all current major computers, using any of three transmission modes: ASCII, ASCII-8, and BCDIC at the user's choice. The system uses an MOS memory system, with hardware conversion from format to format with very low failure rate, according to a company spokesman.

The system can read a card, transmit a message, receive a message, and print on the printer simultaneously on a four-wire full duplex line, providing extensive over lap operations.

Data Compression

The system also offers hardware data compression and unpacking without the need for operator intervention, providing drastic reductions in telephone connect time, the company said.

The system, called the CP-4, can be interfaced to any standard modem, providing operating speeds up to 240,000 bits per second.

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\$1 Billion 'Gift' Goes Begging

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Precompiler Can Save Users Both Computer Time, Money

WASHINGTON, D.C. Everyone will now be able to determine the degree to which a given Cobol compiler meets the new government Cobol standards, according to Dr. Grace Hopper of the Navy Project Languages Group.

New Precompiler

A precompiler, written in Cobol, is now available at no cost which will examine both programs and compilers for exceptions to the standard. The precompiler is being released in conjunction with the

newest version of the Navy standard test programs for compilers.

The precompiler includes a Flowtol translator, which allows the user to code his Cobol programs in a shorthand notation, and have the translator generate proper source language for the Cobol compiler.

The precompiler provides excellent documentation for managers, describing the function and flow of the program and noting exceptions to standard coding.

Diagnostics

The program produces diagnostics indicating various types of syntax errors, general logical errors, incorrect usage, and undefined functions. It produces a line for line listing showing the translated source language and the error indicators.

The diagnostic capability provides an opportunity to reduce the number of compilations necessary to complete the program, thereby reducing the amount of computer time needed.

The net effect of such precompilers could be to improve the overall working efficiency of the programming industry without sacrificing needed machine and man time. Precompilers have been used successfully in several installations across the country.

New Test Programs

The newest version of the standard test

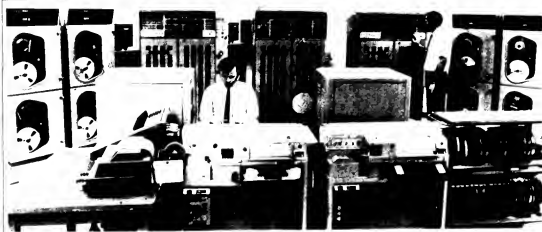
programs incorporates the ability to test a compiler itself, determine whether it can accept correct source language and whether it will reject incorrect or ambiguous source language.

The programs also test the effectiveness of the generated code, and determine the areas where errors are detected.

The programs are available by sending a standard computer tape to George M. Baird, Manager of Testing and Evaluation, Navy Project Languages Group, Pentagon, Room 5D-840, Washington, D.C. 20350. Please specify which programs are desired.

CW Takes a Holiday

One of our sharper (or possibly lazier) staff members noticed that there are 53 Wednesdays in 1969. Since we only promised you 52 papers, and since the first Wednesday, Jan. 1, falls on a holiday, and since we would like to go home for the holidays, we are combining the Jan. 1 and Jan. 8 issues — and taking a few days off. Happy New Year!



Typical remote site data processing center for the Apollo 8 mission.

Computers Form Apollo Communications Lifeline

HOUSTON Live TV from space may have been more spectacular, but the real communications from Apollo 8 were handled by computer.

The communications network consisted of ground, sea, and airborne tracking stations, a central processor at the Goddard Space Flight Center in Greenbelt, Md., and command and communications systems located at Mission Control in Houston.

The 14 ground tracking sites and four Apollo instrumentation ships each has a remote site data processing system, using Univac 1230 computers. The remote site data processing systems accept, record, and transmit data originating from the spacecraft, and compute and issue commands to the spacecraft.

Each tracking station is called a remote site because it is

controlled by Mission Control in Houston. Commands are pretransmitted in the remote site program or are received in real-time from Mission Control.

Sensors in the spacecraft continuously sample the pressure and temperature inside the capsule, its attitude and position in space, and physical factors such as the astronaut's respiration, heart beat, and temperature. The computers can handle up to 200 measurements. The telemetry data is documented by the computer itself, rather than by a special purpose processor that was used during the Gemini program.

Messages from the remote sites are sent to Goddard, where they are formatted, checked for validity, automatically assigned a priority, and routed to Houston. Goddard uses multiple Univac 394's.

(Continued on Page 20)

New Tri-Data Tapes Save \$ for Users

MONTAINE VIEW, Calif. A new inexpensive, nearly error-free cartridge-loaded tape drive system is now available for users of PDP computers. The drive contains four separate tapes in two cartridges, and the separate tapes can be operated completely independently according to Tri-Data Corp. (the manufacturer).

The unit supports complete plug-in compatibility with PDP equipment using its own hardware for control and read/write logic.

Available either as a rack-mounted unit or a desk-top unit, the tape drive provides minimal error-correction capability so that at least four dispovals have to occur before a single bit of data is lost.

The phase-coded data carries information on two parallel tracks with clock cycle information coded as the result of the two tracks. The tracks are effectively complements of each other, thereby nearly eliminating the possibility of an erroneous read or write, according to company spokesmen.

The unit, called the CartrilFile, operates at speeds up to 10 iBps, a faster speed than the result of, but sells for only \$5,500 as compared with a price of \$17,650 for the least expensive PDP tape drive. The interface sells for an additional \$200, and permits the installation of the unit on any of the current PDP systems.

The unit can write either 4, 6, 8, or 12 bit words with completely variable record length. At 12 bit word size on 150 foot tape lengths, each cartridge holds 300,000 words in 1000 character records.

The unit records at 600 bits/inch density, and has a manual file-protect switch on the front panel. Data may be read and written simultaneously from different tracks, providing extensive overlap in operation.

The cartridges are available in three lengths: 50', 100', and 150' at prices of \$14, \$18, and \$21 respectively.

To Buy Stelma Stock

Data Products Selling Informatics Stock

CHIVER CHY, Calif. Data Products Corp. plans to sell its 62.5% ownership of Informatics Inc., a California-based software company.

The offering, to be made following the planned 2 for 1 split of Informatics stock early in January, will total approximately 800,000 shares of which 752,000 shares represent the Data Products holdings.

Ernest Tomash, president of Data Products, said proceeds will be used to reduce an outstanding \$20 million loan incurred for the recent cash purchase of 40% of the outstanding common stock of Stelma Inc. Stelma is a pro-

ducer of communication equipment and systems based headquartered in Stamford, Conn. Informatics and that steps are underway to acquire the balance of Stelma.

In the fiscal year ended March 31, 1986, Informatics had sales of \$7,568,204 and net income of \$3,876,288. (\$2,731,993) or approximately 60% of which was included in Data Products consolidated income, and Stelma had sales of \$17,702,000 with net income of \$1,788,000.

We believe that the sale of our Informatics' stock and the question of Stelma are in the best interests of both Infor-

matics and Data Products," Tomash said. "The future of Informatics dictates that it be able to use its stock without regard to Data Products ownership requirement of at least 51% for financial consolidation purposes."

"The acquisition of Stelma, when completed, will be very beneficial to Data Products since it broadens the corporation base and increases the scope of activity linking both computer and communications technology in the fast growing market area of computer terminals remote access on-line and time sharing."



Tri-Data's new CartrilFile tape unit installed on a PDP 8/5 computer. The unit contains four separate tapes in two cartridges, and can be installed plug-to-plug.

Time Sharing Comparison Report Is Now Available

See article on page 10

SANTA MONICA, Calif.—The proceedings of the Nov. 25-27 National Information Research Institute workshop on time sharing and remote FDP services include the 10 copyrighted programs and instructions developed to demonstrate basic capabilities of available services.

The programs were designed by the institute to provide a "first cut" evaluation of time sharing services by yielding comparative performance data on the following test parameters: memory size, arithmetic, speed, size of symbol table, testing of round-off errors, file creation, file protection, file editing, file access, program development, execution modes, and transmission error rate.

Time Sharing Parameters

The proceedings also include six tables of comparative detail describing other time sharing parameters such as hardware features, executive control, edit

capabilities, file management capabilities, language capabilities, programming aids, rate structure of services, and cost efficiency figures derived from demonstrated performance of benchmark tests.

Printouts from 80 online tests are included.

New Systems Tested

Tests were performed on the following systems: Computer Time Sharing Inc. (CTSI-3300) Remote Computing Corp. (RCS500) Computer Center Corp. (PDP 10) General Electric Mark II (4.4-265) General Electric Mark II (4.4-635) Lymshare Inc. (SDS-940) Allen-Babcock Co. (IBM 360/50) IBM Base (IBM 160/50) and Quicktran (IBM 7044).

The full workshop documentation in two volumes is available for \$100. Orders should be addressed to National Information Research Institute, P.O. Box 1348 Santa Monica, Calif. 90406.

FCC Tariff Probe May Be Renewed

WASHINGTON, D.C. The possibility of a new Federal Communications Commission investigation into some aspects of telephone company interconnection policies has been raised as a result of the filing of the Justice Department in the FCC's complaint concerning AT&T interconnection tariffs.

At least 78 companies and organizations filed by the FCC's decision with the commissioning action or suspension of all or part of the revised tariffs. But the tariffs become effective into force.

The Justice Department with drew its previous request for partial rejection or suspension of the new tariffs proposed in September, but again called for the FCC to investigate the requirement that network control signaling units be installed on shared and maintained by the telephone companies. Justice proposed permitting the new tariffs proposed in October to go into force. Even though this means permitting the continued restriction as to network control signaling functions, Justice would be the relatively brief period of time necessary to investigate this issue.

Areas To Be Probed

Areas which the FCC should investigate, the agency said, include (1) the likely reliability of network control signaling equipment whether or not provided by the carriers; (2) the probability that telephone companies would not adequately maintain customer-owned network control signaling equipment and the costs flowing from this; and (3) the feasibility of a less restrictive arrangement such as a compulsory maintenance contract for customer-owned network signaling equipment.

Reiterating the position it had taken in the FCC's recent computer communications inquiry, Justice commented that the general prohibition against customer-owned network control signaling devices could not be justified on the theory that such equipment would be an indispensable part of the carriers' service, in the sense that duplication in providing such equipment would be prohibitively expensive. The only acceptable justification, the agency declared, would be that customer-owned units would adversely affect the telephone company's operations or service. Others who suggested that the tariffs go into effect Jan. 1 with a follow-up FCC investigation included the American Petroleum Institute's Central Committee on Communications Facilities and the National Retail Merchants Association.

ITT Objects

In its comments, ITT stated that the question of whether a telephone company furnished a network signaling control unit must be used for interconnection of terminal equipment or a private communications system with the public telephone system was the only issue left unresolved. Noting that ITT manufactures equipment primarily

working with Bell System equipment and "producing precisely the same network control signals," ITT pointed out that AT&T interconnection policies have been raised because it cannot that ITT's Stromberg-Carlson or Automatic Electric's telephones are not compatible with AT&T central office switching equipment.

Bena Adds Its Voice

The Business Equipment Manufacturers Association contended that the tariff revisions filed in October remain less than fully responsive to the needs of the public, including the data processing industry and its users, for maximum benefit from use of telecommunications facilities provided by the communications carriers.

Although some of its previous general objections were satisfied by the removal of the prohibition against connection of private communications systems, Bena said, it still had a number of specific objections, including one against the provision that an attendant must operate the network control signaling unit. The association asserted that it is "critically important that in the use of the message toll network by the data processing community, terminals should operate in an unattended mode rationally." Although it realizes that AT&T has declared that when an attendant arrangement has been developed it will offer this option to customers, Bena said, it urged "explanation of this declaration in light of the expressed need of the computer industry."

One of the loudest protests against the Planex Communications Inc., of Beltsville, Md., and its subsidiary, Computer Telephone Corp. They said in a joint statement that AT&T "seeks by artificial means, and cleverly contrived language in its proposed revised tariff to retain the same or even stronger controls over so-called foreign attachments."

CSC Contract Is Renewed by Defense Agency

LOS ANGELES. Computer Sciences Corp. has been awarded a one-year, \$4.1 million contract for continuation of all contract purchased services it provides to the Defense Communications Agency's National Military Command System Support Center.

The award is for services that CSC provides in connection with the agency's mission of technical support to the National Military Command System.

Dr. Stewart F. Eliezer, CSC's president, said the agency's contract is the total value of the contract is \$8.6 million.

The center provides automatic data processing support to the Joint Chiefs of Staff. It maintains files of information furnished by the military services and agencies of the Defense Department.

System Speeds Stock Buys, May Help Eliminate Errors

Special to Computerworld
SAN FRANCISCO—A new offense against the paperwork plaguing stockbrokers is being made by an automated information system installed at the Pacific Coast Stock Exchange (PCSE).

Thomas Phelan, PCSE president,

explained that the Comex (communication and execution) system will make the exchange the first in the United States whose member firms can teletype orders to a central computer and receive back confirmation of the executed order.

The system is expected to be in

full use early this year. Initially, Comex will be used to execute odd-lot orders (less than 100 shares), Phelan said, but later the system will be programmed to execute round lot orders.

Error Reduction

Comex reduces the number of steps ordinarily required to just one simple Teletype entry. "Member firms will find their work loads eased and their error potential reduced while their order capacity will be greatly increased," Phelan noted.

Comex will allow any members to transmit an order to either of the exchange trading floors (San Francisco or Los Angeles). The computer complex behind the system will accept the order and execute in accordance with normal handling procedures. Comex is compatible with all member firms' private wire networks, thus making the new service available to each through the single access of his Teletype terminal.

When a broker's order is entered and the transaction has been made, the specialist in that stock is automatically and im-



Confirmation of an order executed by the Comex system is discussed by Thomas Phelan, president of the Pacific Coast Stock Exchange, and Richard Gross, a stock specialist.

mediately notified at his post on the trading floor. Simultaneously, the broker who entered the order receives confirmation of execution, noting such details as price, number of shares, stock symbol, and the customer's order number.



A buy order is transmitted via Comex by Charles Marcus in the New York office of E.F. Hutton & Co. Watching are James T. Gahan and Norman M. Epstein, vice presidents of the brokerage firm.

Communications Network Gets Its First Customer

NEW YORK—Info-Com, Western Union's nationwide shared-use communication network for business firms, has gone into operation with inauguration of service for Montgomery Ward.

The service provides each subscriber with a private, computer controlled, multination network at shared-system savings.

Ward is using Info-Com (Information Communications) to link its Chicago corporate office with 17 Ward facilities coast to coast. The system transmits messages at 100 words a minute.

"The shared-system service gives us the advantage of a private, computer operated system without the expense of having to lease or purchase our own computers, and that makes a big difference," said L.K. Howell, Ward's Corporate Communications Manager.

Service is provided through Western Union's computer center in Chicago. As Info-Com expands, computer centers in New York and San Francisco will also be used. Each center is equipped with two Univac 418 systems.

Sending points prepare messages on a teletypewriter which produces a punched paper tape and hard copy. The tape is inserted in a transmitter and the message is sent to Western Union's computer center.

The computer selects the terminal on which to deliver the message, checks to be certain it is the correct terminal, and then transmits the message.

A double check, the computer verifies, by means of an

automatic answer-back, that the right terminal has been reached.

Besides communicating with stations on their private Info-Com network, subscribers can use their teletypewriters to communicate with Western Union Telex subscribers, to send messages to subscribers of the Bell System's TWX service, and to send telegrams through Western Union's public message network.

All Info-Com stations, regardless of class of service or level of code transmission, can communicate with each other because of automatic conversation facilities. In addition, all stations have message retrieval capabilities, two levels of transmission priority, and alternate delivery features.

Info-Com provides three classes of service: Class 1 for heavy volume users operates at 100 wpm over direct access lines; Class 2, also at 100 wpm, but suitable for medium volume service, has access through shared facilities; Class 3, for low volume at 66 wpm, accesses through Western Union's Telex network.

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REPRESENTATIVES IN OTHER MAJOR U.S. CITIES, CANADA AND EUROPE

Good Name of the Community

It is impossible to ignore the antitrust suit which Control Data has brought against IBM. Its financial aspects may be tremendous. But far more important to the computer community at large are the many side issues which directly and indirectly call into question the conduct of many of the people and organizations in the industry.

If Control Data's statements are true—and on that we have no opinion at this point—then many people have been much less than perfect in their conduct. The bright light of publicity which is never far from the wonders of computers may bring national attention to some improper happenings in our industry. Our enemies may well try to use this publicity to smear us—and to try to push aside or to inhibit some computer-related projects. We may have little effective defense against this.

Nor can it be said that we have not been warned of these possibilities. Early last year when *Datamation*—the undoubtedly leader among our industry magazines—was called to task for saying that Control Data was effectively a "confidence trickster," the magazine "apologized" by saying that Control Data was no more a "confidence trickster" than any of the other computer firms! And "too less so" was the obvious implication.

Despite this, we took few precautions against adverse publicity. We hope that Control Data fully considered the potential damage to the good name of our industry that their suit may bring.

Whether or not the complaints are true, now is the time for the industry to bring policing itself—before the government begins regulating it.

Two Major Achievements

Dr. Herbert Grosch appears to have taken a beating in the recent meeting on how Cobol standardization should be implemented. Indeed, between the representatives of some government agencies (who were conspicuously silent) and of various groups (who were outspokenly but constructively critical) there was precious little left of his original position when the meeting closed.

However, he was left with two major credits which should not be ignored. He had brought people together—and persuaded them to be constructively critical. This means that the final implementation will certainly be improved—and that is very important.

Moreover, he had done it openly—where the users could see what was being decided. He had done without the secret gatherings which a number of our so-called "representative" groups claim are necessary. And he had resisted the pressures of some of the hardware and software manufacturers to keep the news away from the users.

These are two very major achievements which greatly outweigh any technical knockout.

Make War, Not Love

Whereby Cupid Gets Involved In a Commercial Cross-Fire

CW has been receiving since last spring a steady flow of news releases announcing software packages with such exotic names as Flirt, Code, Cupid, Fig, and Iva. All were from a firm called Econometrics and all bore the notation "Contact Dr. Philippe A. Clavier." At first we suspected someone was putting us on. Later we confirmed the announcements were for real. But finally our curiosity got the better of us. "Will we asked Econometrics for more information. This is the company's reply, headed "Cupid Makes War, Not Love."

PASADENA, Calif.—Cupid is just one of the exotically named programs in the library of Econometrics, a Pasadena software firm. The program acronyms all suit—sometimes ironically—the functions performed. Cupid is a war-gaming technique that predicts the outcome of gasoline price wars; Fig predicts company growth; Iva uses the results of past open bids to improve a company's chances of getting a job while leaving a minimum on the table; and his(Egyptian goddess of fertility) assesses the chances of meeting sales projections.

The program names may show a touch of whimsy, but the goal of this new software firm is cut and dried: establishment of a company that makes computer-aided management a reality. Dr. Philippe Clavier, Econometrics president, describes the approach.

Goal: Decision Making

"We're the only software firm supplying a tool aimed at decision making, not just data processing. This is the area that so far has received the least assistance from computers, yet could use it the most. Management is a series of gambles. A computer can be used to hedge the bets. "Our programs use the data processing capabilities of the computer to manipulate simulations, but with a difference. In the typical simulation, the manager uses several runs on the computer, changing the inputs for each run, to get a list of possible results for different strategies.

"But, this is just another list of numbers. It still has to be evaluated by the manager. And this is where our programs take off. With each result, the manager gets a 'risk factor' in the form of a confidence level. With this he can assess his possible moves on the basis of 'Which result is most likely to occur?' rather than 'Which result looks best?' The manager is now on a firmer footing, less dependent on 'intuitive judgments' or hunches.

"And our programs are based on more than just probabilities. It's useless to know that in 8 out of 10 tries you would be successful, if you go bankrupt on the first try.

Choosing the Odds

"With our programs you choose the odds you

want, then the computer defines the result that could at best be expected with those odds. It's a bit pessimistic, but very realistic.

"So far, we have applied the techniques to common business problems like inventory control, predicting sales and profit before a product hits the market, project control (Can you see Ferti/Cost without its charts and with automatic exception reporting? That's our Peac.) and several others.

"The technique lends itself readily to rapid tailoring so we are expanding our library almost on a monthly basis."

About Dr. Clavier

Dr. Clavier speaks from a background of 20 years of experience in industrial research and management. He has made scientific contributions to electronics, information theory, plasma physics, re-entry physics, theoretical physics, and mathematics. He has authored dozens of papers and has over 40 patent applications to his credit.

Dr. Clavier's last position, prior to forming Econometrics earlier this year, was with a research organization, directing the study of offense-defense strategies for the Department of Defense. He developed a computer simulation of nuclear attacks, but found that an evaluative method was needed. Applying confidence statistics to the simulation, he found an extremely powerful forecasting tool.

Beating the Plowhorse

The application of the same methods to management resulted because, as part of management, he was involved in budgeting and business projections. The intricacies of existing techniques prompted him to scrutinize economics in depth. He discovered a surprising fact—mathematics developed in quantum mechanics could be applied to economic factors. He now had a mathematical model to which he could apply his war-gaming techniques.

On Feb. 1, 1968, Econometrics was incorporated. Since then, the company has developed a library of programs that hit the problems of management on three levels: the level of *operational control* with programs like Flirt, an automatic replacement for Ferti/Cost; the level of *tactical control*, with programs like Iva, a forecast of cash flow and labor load fluctuations; and the level of *strategic control*, with programs like his(E), an assessment of the "make or buy" question to yield the best profit. Only these types of programs are developed. No "data" problems are considered. The reason for this is explained by Dr. Clavier:

"The lack of an integrated management oriented system has been decided by many. By addressing ourselves to decisions, not data—we have taken the first significant step towards such a system."

Letters to the Editor

Virtual Memory

To the Editor

Based on reading your editorial on the 360/67 "Virtual Memory" concept [CW, Dec. 11] I felt compelled to write and ask the question, "So, what else is new?"

The Burroughs Corp., in the form of the B5500 initially and the B5500 later on, has been using this concept for at least five years. Through automatic segmentation by the various computers (Algo, Cobol, Fortran), Basic's segment dictionary is created at compile time which shares disk storage with the object code generators.

When the MCP (Master Control Program—i.e., operating system) "fires up" a program, it keeps (1) a Program Reference

Table (PRT) and (2) a "stack" for each program. Through an interrupt system (see below), the MCP (and hardware) senses the presences or absences of a given segment of code through bit 46 of a 48 bit word that is called a Descriptor. If present, the code is executed; if absent the program is temporarily "put to sleep," any other programs in memory that can be "awakened" it, and then the MCP through floating channels selects the channel to fetch the code needed and put it in a pre-selected area of core, put the address of it in the low order 15 bits of the Descriptor and turn on the Presences bit.

The normal mode of operation in the B5500 is multiprogramming (up to nine jobs), and there are two processes, then

both multiprogramming and multiprocessing. The program is completely free of memory size restrictions and also burdensome "multi-phasing" as I like to refer to it.

At the Department of State Highways have been using this equipment and concept for two years and know of many other similar uses. One of the normal mode is three to five jobs running plus Data Communications. We run approximately 1,200 jobs through the system monthly on a two shift, five day week basis. We do this on a single processor (maximum two), six megabyte main memory (maximum eight), two floating channel (maximum four) system.

Edward J. Lennon
Lansing, Mich.
(Continued on Page 5)



COMPUTERWORLD
THE WEEKLY FOR THE COMPUTER COMMUNITY

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Weekly Newspaper—Second Class Postage Paid at Boston, Mass. Published every Wednesday by COMPUTERWORLD, Inc., 90 Austin St., Newton, Mass. 02160. Telephone: (617) 332-5600, & TWX: 710-335-6635. Copyright 1968 by COMPUTERWORLD, Inc. Area Sales, Editor in Chief, Robert M. Patterson, New Editor, Neil P. Miller, National Sales Manager, Henry Fine, Production Director, Fred P. Padden, Circulation Manager, Frederick Anderson, Jr., Financial Editor, Joseph Hendon, Kate Richardson, Ginny Berthold, Evelyn Connell, Ely Townerich, Assistant Editors, Christine Reed, Advertising Service Manager, Karen Aylsworth, Advertising Coordinator, Patrick J. McGovern, Publisher, W. Walter Boyd, Associate Publisher.

Subscription rates are: \$9 for one year, \$18 for two years. Add \$1 per year for Canada, \$3.50 per year for foreign. Please send all editorial and subscription material to: COMPUTERWORLD, 90 Austin St., Newton, Mass. 02160. (617) 332-5600.

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Research
Report

Subtasking Can Save Both Time and Core

By Peter L. Briggs
of the CW Technical Staff

With the constantly upgraded software available from manufacturers today, it becomes increasingly difficult to relate the new techniques to the problems which every user faces in his installation. Every time a new feature is added to the system, the user must analyze its effect on his special problems, his manpower, and his long range planning.

Frequently, the user finds it necessary to spend more time looking at these new features than he does planning for his own installation's expansion. This problem is especially true in installations where the system software represents the major bulk of the user's design criteria.

Recently [CW, Dec. 25] IBM announced additions, scheduled for next spring, to the multiprogramming capabilities under DOS for the System 360 line.

The actual changes are described under the category of "subtasking," the capability of running user programs as subsidiary programs to other user programs.

What Is Subtasking?

The name, "subtasking" is self-descriptive. Consider the situation where a special error situation develops. It is decided that, when this situation occurs, a special exception program will be prepared for management. It

is certainly undesirable to waste the core necessary to build into the program the routines to create this report. The system is very busy with the normal process of handling its files, answering questions from remote sources, or other such activities. You don't want to stop the number of users of the system just to print out this report. If you choose a subroutine, then control must pass from your main program to the subroutine until the report is generated. By using a "subtask," you can effectively multiprogram your report with the main program, therefore letting the system carry out its normal functions in the same time frame while it generates this report.

Thus, subtasking gives the user more room to maneuver in his system, reduce his processing mass, and still fulfill his objectives.

When Should You Use It?

Under what conditions will subtasking gain you something? In the environment where the resources for a given program are limited by time, availability of devices, and response time, then this internal multiprogramming can gain you much.

In a batch environment, it is just as effective to use a subroutine, because there is no activity of sufficient priority to demand more resources from the system. In the on-line environment, how-

Some Pertinent Questions

Q. What specific types of systems can use the changes to advantage?

- A. 1. Systems where exception reporting is desirable.
2. Message response and terminal handling systems.
3. CRT display oriented systems.
4. Systems where there are occasional very slow file searches.

Q. What type of users will be affected?

- A. Those users who are using or contemplating on-line systems.

Q. Will changes to existing programs be necessary to use the features?

- A. Yes. The system must be redesigned to take advantage of this feature. Actual reprogramming might not be significant, however.

Q. Will much training be required to take advantage of this feature?

- A. Quite a bit of training will be needed for program designers, very little for programmers.

Q. Will there be any definite disadvantages to using this feature?

- A. Yes. 1. 2000 bytes of additional core for the supervisor.
2. Slightly higher system overhead in operation.

Q. Will there be any specific advantages in using this feature?

- A. Yes. 1. Shorter response time for inquiries and replies.
2. Less time for the system spent in the wait state.
3. Less complicated and smaller main programs.

ever, the availability of devices such as printers, tapes, disks, or console printers is very limited. With subtasking, the user can simply "attach" his subtask, and let it wait for the specific device, while the main program continues to run. This can actually save you quite a bit of money. The system resources are kept busier, the program spends less time

waiting, and a smaller system can sometimes be used than would otherwise be required.

What Does It Cost You?

According to IBM, the overhead for subtasking is about 2000 positions of core. This could well be critical for very small systems (e.g., under 64K) because they are already trying

to save every spare block of core possible. In a larger system, this is probably not critical, because 2K of additional core is a small percentage of the available amount. There will certainly be an operational overhead, consuming additional machine cycles. This overhead will probably be offset by the overall time saved in running the program.

How Difficult Is It to Use?

It should be as easy to use as the current calling sequence for subroutines, according to an IBM spokesman. If the additions live up to this claim, then the user will face no additional programming burdens.

There will be a definite burden at the user's design level. The designer must find out to account the user's design criteria to make maximum use of subtasking, and he probably will find that discussing the problems with a user of the full operating system under which this technique has been available for some time will be helpful.

There will have to be certain additions to the compilers to interpret the statements attaching these subtasks to the main program, and some means of notifying the program of the completion of the subtask must be provided. These alterations should not require any significant learning problem for the user's programmers.

Letters to the Editor

(Continued from Page 4)

To the Editor:

Praise should be given to University of Michigan's Professor Bernard Galler and the people at IBM's Scientific Center for developing the necessary hardware and software to liberate the programmer from the physical limitations of core memory on the IBM 360/67.

However, . . . four months ago we received the Burroughs time sharing package and have been fortunate in becoming the first to run extremely large programs economically on the B5500.

If credit is to be given for the revolutionary accomplishment, it should be given to the Burroughs people who explored this concept and made it work in the field.

James P. Boron
Marketing Staff
Direct Access Computing Corp.
Southfield, Mich.

To the Editor:

We have been offering such services to the public since earlier this year using a time sharing system jointly developed by the Burroughs Corp. and Remcom Computing Corp. for the B5500.

The time sharing system on the B5500 performs quite well using any hardware configuration over the minimum, with no software modifications. We may operate with one or two processors, in consultation with the CMS/CP67. Further, all compilers automatically segment source programs based

on the logical structure of the particular language using a variable length segment of up to 8K characters.

And economy? A competitive analysis clearly shows that our services are more economical than any one of several established services now available.

The claim of the Computer Software Systems that it "can provide up to 40 times more problem solving power . . . based on the ability to provide extra memory space for user's programs . . . is highly misleading to the general public.

In the light of these facts, your editorial statement seems a bit out of place, would you not agree?

A. P. Weeks
Manager, Los Angeles Branch
Remcom Computing Corp.
Los Angeles

Computerworld did miss the impact of the recent provision of time sharing on the Burroughs 5500s—but we did not intend to slight anyone. We yield to no one in our admiration of the designers of the Burroughs 5500 series, and we said so as early as our first issue and as recently as our Dec. 18 issue. Ed.

Memo From Sydney

To the Editor:

I want to congratulate you on the great job you're doing in the computer world. It is an excellent paper, a real pleasure to read, and very informative es-

pecially to my staff and me "down under."

W. J. Finnegan
Branch Manager
Honeywell Pty.
Sydney, Australia

Who's Kidding Who?

To the Editor:

Several recent issues have carried articles concerning the contradictions and conflicts contained in IBM's PL/I language. These articles, although probably very significant to the success or failure of systems using PL/I, highlight one of the most basic problems of the EDP field.

The EDP professionals (and I am a novice with 5-1/2 years in the field) can't see the forest for the trees. The Cobol controversy is almost as old as the supposedly practical usage of computers to solve business problems. Now we have another major crusade in Cobol vs. PL/I. And gloriously on the horizon, appears the new problem of PL/I vs. PL/I (or whatever).

All this is ludicrous when the truth of the matter is that most of the EDP professionals don't even recognize the reason that the computer was developed. The basic programming problems are not that the computers aren't. They are not the results of whether a programmer can code instructions faster using one language than another.

The basic programming problems arise, and remain, will remain, from the problem of the lack of understanding by EDP


professionals of the basic needs of the business they are supposed to serve. It doesn't make a damn bit of difference how the program is constructed as long as the results are profitable (remember that word?) to the business using the computer. If we used the same criteria to evaluate EDP installations as manufacturers, say, did to evaluate their production equipment, how many installations would of test we should apply?

Until the EDP profession recognizes the fact that intensive training is required in the partic-

ular business problems that require solutions before intensive EDP training can begin, all these articles, seminars, etc. on PL/I, Cobol, Bomb, and many others, are just so much garbage.

We need people in our profession who can recognize and evaluate business requirements a lot more than we need the language experts. Until we develop these people, we're kidding ourselves about our "contributions" to the business world.

H. B. Dawson
Systems Analyst
Union Steel Products Co.
Albion, Mich.


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Editorial

The Year of the Threshold... 1968 Was Only a Beginning

The year 1968 has gone, but we are still greatly affected by its happenings, many of which are as yet undigested. Like every year, it was revolutionary. Unlike other years, however, the revolution could be seen only as a threshold to the outcome of specific developments.

There have been few other threshold years in the short history of computers. For instance, 1964 saw the introduction of the IBM 360 and the production and installation of the Honeywell Series 200. But at the end of the year the situation was only a difference in degree. So 1964 was not a threshold year.

But 1968 was the year opened with a well structured industry. Hardware, software with its operating systems, telecommunications, real-time systems — each had their own disciplines. Time sharing held its promise for the future. And many people all over the country were able to follow developments.

As the year ended, we had an industry which stood on the verge of confusion. Many of its basic structural pillars were crumbling, and vigorous new blood without a "time to think" attitude was entering many areas. It was possible to comprehend implications of not more than a section of the industry.

1968 a President

Similarly, at the start of 1968, almost everyone in the industry knew everyone else. If not by name, certainly we knew their installations. Computers were personal things, and the vagaries and sheer stubbornness of some of them were as well known in the community as the lectures of Betty Davis or Cary Grant. When the year ended, it was clear that this group familiarity was gone forever. The advent of more and more computers limited most of us to the level of a single manufacturer's user group. We lost something which presumably we shall never regain.

But we gained something — new strength, an independence of outlook, an appreciation of both our importance and unimportance in the scheme of things. We saw the sciences and businesses beginning to realize that computers lead to new and necessary advances and were no longer simply in the field of research. We lost some of our comforts, but we gained in maturity.

1969 Prospects

With the approach of 1969 we have a similar loss, and hopefully a similar gain, in the confusion that has followed the Carterfone decision, which is opening telephone networks to much wider operations; in the proliferation of disk pack manufacturers; in the threat of a price war; in the decision of IBM to change its marketing methods; and in the ignorance of not knowing what those new marketing methods will be.

There has been a loss of understanding, a loss of quick comprehension of the impact of any particular item. Walking around the exhibit case of the Fall Joint Computer Conference in San Francisco, one heard many people comment, "There's just too much. I can't take it all in." Those who previously had a good grasp of what was going on throughout the industry were looking at new products but seemed unable to integrate them. No longer was there a consensus to the industry.

The Gain

Against the loss there was an equal, or greater, gain. While observers were unable to take in the whole industry, they were excited about those parts they were still following. Where previously they had one or two opportunities, now they had seven or eight, and were discovering the truth of the poet's words, "What can they know of England who only England know." They were realizing for the first time elementary points about the input they were trying to get into their systems — simply because they had been trying to decide on the best keying input method, trying to

choose between optical character recognition and the many different key-to-tape systems being offered during the year. They were beginning to realize the impact of error that were springing from the system, and the opportunity of minimizing them, through being careful in the choice of systems to minimize them.

Mundane Points

If there was any common ground, perhaps it was best brought out by William C. Norris, chairman of Control Data Corp., in an address to a group of security analysts. Norris did not omit the glimmer of the super scale computer that his company produces, but he gave even more attention to supposedly mundane items such as effective air conditioning and cooling systems, generators, reliability, and availability. These were the items he found of prime interest.

No longer was the question: "Can I do this within the price I am prepared to pay?" The question had now become: "Of the number of ways available to me within my price budget, which is the best?" It often occurred that the answer was to be found at the man/machine interface with emphasis on quick and easy recognition and elimination of error. Here it was that the mundane points, such as the size of the working space for a console, the positioning of a scope in relation to the operator's eyes, the design of a type face, or the phrasing of a dialog, turned out to be the critical element.

Back to Nitty Gritties?

This is a real threshold. Its implications for the future are not known. It certainly means that we have to cope with a great deal more data than ever before (and, goodness knows, it was already a flood). We have to get into the nitty gritty of areas we thought had been left behind years ago when we came out of operations research. We have to face the inevitable reorganizations, redistributions of tasks, and rebudgeting that will be necessary to cope with our job effectively.

Unknown Future

We must do this in a comparatively non-structured market. So many things are still up in the air. Who knows what will be the position on the patent question, on privacy, on data banks, on communications, to name a few? Where and who will be our colleagues in the field? More importantly, what education will they need? How much will they cost, and what are the promotion prospects we can offer to make their careers, not merely that overworked word "challenging" but productive for both parties? Who knows what scandals will develop from the misuse of computers and from amusements and other civic nuisances?

We do not know, and yet we must be prepared. This is what we are paid to do. Anyone in a young industry must expect the unexpected. The challenge is to move forward, to comprehend any situation, to see what is best for ourselves and our employees, to determine how to use the resources made available to us to their maximum capacity, to see that our social responsibilities are not ignored, and to see that we do not impede the productivity of our systems.

We Must Communicate

Above all, we must communicate effectively with those around us so that as we begin the year 1969 we are fully prepared for the future. We will have to break many guidelines, make many new rules, set up new departments, new disciplines, and take on new responsibilities. The new year, 1969, will be quite a year, and *Computerworld* sincerely wishes all members of the computer and ancillary professions a heartfelt wish that it be a happy one. — A.T.

IBM Separate Pricing Was Year's Top Story

The Big Daddy story of 1968 may well turn out to be Control Data's antitrust suit against IBM. But at this point, it's impossible to rate this story against the other major events of the year, as it has been left out of *Computerworld's* selection of the Top 10 stories of 1968.

The other stories, as rated in importance by CW's editors, are as follows:

1. IBM announces it will change its pricing policies by July 1, broadly indicating it will be charging for at least some software.
2. The General Services Administration begins modifying its procurement practices as a result of the controversy over Phase II.
3. The first software patent is issued and the Court of Patent Appeals rules that software is patentable.
4. Cohol is adopted as a standard by the USASI and then the Defense Department.
5. The Ruben Report on PL/I is released.
6. The foreign attachments tariffs are ruled unlawful by the Federal Communications Commission.
7. Computers make a poor showing in handling presidential election results.
8. Questions arise as to who is covered by, and who will enforce, the ethical guidelines of the Association for Computing Machinery.
9. A jury awards damages against IBM in a user suit over system reliability and support.
10. A \$39 per month data processing system is announced by Vietnam.

IBM Announcement Came as Surprise

On Dec. 6 IBM sent waves through the computer world by announcing that it was conducting a study "to determine the degree to which IBM's separate offering of priced and unpriced software should be separately offered and priced" and that "no later than July 1, 1969, it expects to make changes in the way it charges for, and supports, its data processing equipment."

Suddenly all the debates over the effects of separate pricing for hardware and software ceased to be academic. Suddenly it was not "what would happen" it was "what will happen."

Coin Has Two Sides

Separate pricing advocates have maintained the hardware will cost less, possibly as much as 15% less, and that this extra money will pour into the independent software houses "because they write better stuff anyhow." But others have warned that IBM, already "the biggest software house in the world," may be able to sell its software for less than the independents because of its huge number of users.

Industry sources speculate that IBM will continue to supply free software, such as operating systems, fundamental to the operation of its systems but will charge for applications software.

Back at the Ranch

Meanwhile, the users are stewing a bit. Although rental users probably will not be affected, owners and third parties could find themselves paying for services that formerly were free.

The egg has been laid but it may not hatch for another six months.

2) Phase II — And After

Last January, the Air Force announced the final chapter of

the controversial Phase II procurement. Burroughs Corp. was awarded the contract, amounting to \$60 million, as opposed to the original \$114 million awarded to IBM.

The results of this re-examination have gone a long way toward improving the techniques used for procurement of federal systems. Most of the systems called for in the contract (135 \$2500 systems) have already been installed. The remainder will be installed by July 1, 1970.

The next stage occurred when the General Services Administration announced that, for the new "offer to bid," there would be a requirement that manufacturers be up to every claim in their sales literature, brochures, and other related material given to the government in conjunction with procurement. Clauses were provided to charge the original manufacturer with the costs of changing manufacturers should equipment prove unsatisfactory.

In addition, peripheral manufacturers who made "plug-forgo" compatible equipment were to be given preference on the procurement schedule. This made it more than likely that tape drives, disks, and other such devices were compatibility could be proven would have priority over the computer manufacturer in supplying peripherals.

Loss One, Win One

The price reductions which the government required were not agreed to by the manufacturers, but the new responsibility clauses were accepted.

The third act opened with L. Richard Clevary of Bryant Computer Products contending that independent peripheral manufacturers were not re-

(Continued on Page 7)

GSA Stiffens Warranty Requirements

[Continued From Page 6]
ceiving proper treatment from the Government Accounting Office. He contended that it was economically unfeasible and generally very difficult for independent peripheral manufacturers to bid on sections of a computer system under current practices.

Some Make the List

The director of the GSA, H.A. Abernethy, then invited some 50 independent manufacturers to apply for a position on the procurement schedule. Several firms applied. It was later announced that the GSA had entered into contracts with two.

The next step came when the GSA announced that the manufacturers were going to be required to supply cost breakdowns on their equipment next year, a requirement already enforced when purchasing from all other industries.

The entire procurement situation is "under study," a GSA spokesman told a CW staff writer recently. The GSA has not yet satisfactorily dealt with the problems, nor has it proposed comprehensive guidelines to give adequate protection to

vendors, first assistant commissioner of the Patent Office.

One of the basic issues involved was whether the program itself was actually patented or if the "technique" was patented. To be patentable, an item must be an art, a machine, a manufacture, or a composition of matter.

It is possible that a program could be considered as a machine, since each time it is loaded, it creates a unique special purpose machine.

The other category possible is that of an "art." The U.S. Supreme Court has defined an "art" as, "a mode of treatment of certain materials to produce a given result."

The Patent Office undertook a broad study of the entire patent problem.

Landmark Case?

The most recent act in this area was the decision, by the U.S. Court of Patent Appeals, that any process which could be performed without human intervention, whether or not it could also be performed as a mental



This is how the San Francisco Chronicle viewed the finding of large blocks of uncounted votes in San Francisco. (Reprinted by permission.)

developed under the direction of Cmdr. Grace Hopper, enable a user to determine the degree to which a compiler meets language standards.

Then last month a squabble broke out over what a "standard" Cobol should include. Dr. Herbert Grosch of the National Bureau of Standards favors a "floor to ceiling" concept; i.e., each level should contain no more nor less than the standard calls for.

The manufacturers disagreed. They felt that a floor was enough for now and that pre-compilers would provide enough protection for users. In this they had the support of Cmdr. Hopper, who felt the standards have not been around long enough to define where a ceiling should be placed. She has long believed that pre-compilers (programs which analyze the source code to determine whether it fits the standard and what facilities are needed) will provide adequate protection for users.

5) The Rubby Report

Early in the fall, the Air Force released a 283 page report with the innocent title of a "Comparative Evaluation of PL/I." This detailed comparison of PL/I with Fortran, Cobol, and Jovial had been conducted by a team headed by Raymond J. Rubby of Logicon, Inc.

The study was a landmark in language comparisons. But CW disagreed with the conclusions. It made a detailed study of the report (CW, Nov. 6, 13, and 20) and concluded that the way in which the study was conducted and the way in which results were analyzed had biased the findings in favor of PL/I.

CW's conclusions, based on the data in the report, was that PL/I is difficult to learn, error prone, and more suitable for professional programmers than for the average computer programmer.

Standardization

Meanwhile, attempts were being made, under USASI, to determine whether PL/I was suitable for standardization. One faction felt that PL/I was in need of immediate standardization, another felt that, due to the lack of readily available information, PL/I was not ready for standardization.

The first revised set of tariffs filed by the telephone companies brought such a cry of anguish from users and the Justice Department that the telephone companies quickly filed a second, more liberal, revision. More squabbling cries were heard and, although some including the Justice Department urged letting the tariffs go into effect and revising them later, it appeared their implementation might again be delayed.

In the meantime the old tariffs, with the exception of the rules relating to Carterfone type equipment, remain in effect.

AT&T vs. the Users

American Telephone & Telegraph Co., spokesman for the telephone companies, is trying to hold onto as much control over equipment as it can, contending such control is necessary to protect the network. The users, while agreeing that user-owned equipment must meet reasonable standards, contend that AT&T is simply trying to maintain its virtual monopoly in supplying equipment.

7) Election Errors

The biggest losers in the 1968 presidential election were computers. While the many failures in counting and correlating election results eventually were traced to software and human errors (one brave election official said, "Maybe our people aren't ready for data processing yet"), the public only knew what it saw on TV and read in the papers.

In San Francisco, where 13,000 votes went uncounted for two weeks, the San Francisco Chronicle commented editorially: "Computerization of the results, introduced last June, was supposed to be the chrome-plated, modern way to get instant decisions. It had led both to long delays and, as we have seen in the recent election, to ludicrously incomplete counts."

The paper suggested the city return to adding machines and concluded: "Backward to progress."

To the Defense

Syndicated columnist Don Maclean came to the defense of computers, pointing out that they could reduce corruption by providing quick counts. Any officials who withheld ballots long enough to tamper with

(Continued on Page 8)



Navy Cmdr. Grace Hopper and Dr. Herbert Grosch wound up on opposite sides of the fence in the controversy over implementing the USASI Cobol standard.

the government and the taxpayers, according to Caveney.

3) Software Patents

The software patent uproar began when the President's Committee on Patents and Copyright withdrew parts of section 106 of the proposed patent guidelines. Section 106 originally said, in part, "A plan of action or set of operating instructions, in whatever form presented, to cause a controllable data processor or computer to perform selected operations shall not be patentable." This part of section 106 was included to eliminate the problem of finding prior art in the field where such information is not generally available.

Then the Patent Office issued a patent to Martin A. Goetz of Applied Data Research for an oscillating sort technique, defined by the use of narrative, with a flow chart for formal definition.

Not Really a Landmark

"It may be invalid. We issue said patents every day," was the reaction of Edwin L. Rey-

process, fell within the range of patentable material.

The Patent Office has asked the court to rehear the case but has agreed that if the decision stands software would be patentable.

4) Standardized Cobol

Cobol became a standard language in 1968 with the adoption of a four level version by the United States of America Standards Institute (USASI), a nonprofit trade group with quasi-legal authority. The action climaxed nine years of effort.

The standard approved was very similar to Cobol65, except that four levels, instead of two, are defined.

The Department of Defense then announced that it was adopting the standard. As the largest government computer user, the department in effect has set the precedent for use of the standard.

Testing the Compilers

In the meantime, the Navy announced that the first of its programs for testing Cobol compilers was available. These tests,



Viatron's data processing system 21, one of the newcomers of 1968.



COMPUTERWORLD

education

Moore School Formally Establishes Graduate Computer Science Group

PHILADELPHIA — The University of Pennsylvania has formally established a graduate group in computer and information science at its Moore School of Electrical Engineering.

Although a CIS curriculum has existed since 1959, the need for an integrated curriculum and corresponding research program was clear, said Dr. John G. Brainerd, director of the Moore School. There are 235 graduate students this year who have designated CIS as their primary interest. Research projects have expanded accordingly, he said.

The group will be chaired by Dr. John W. Carr III, professor of computer science. The faculty will include five full professors and offer some 30 advanced courses in CIS. In addition, more than 40 related courses will be available outside the Moore School.

Cal Poly to Offer a Degree in EDP

SAN LUIS OBISPO, Calif. — A four-year degree major in computer science has been approved for California State Polytechnic College. It will be a new curriculum in new facilities for new kinds of occupations brought on by the technological revolution, according to Dr. Clyde P. Fisher, dean of Cal Poly's School of Applied Sciences, which will offer the new bachelor of science degree in computer science.

The program is one of the first of its kind established in the 19-campus state college system.

Students enrolling in the computer science major will share Cal Poly's new \$1.6 million computer science building with students studying mathematics and architecture.

College to Use Radio Station Computer

ATLANTA — Georgia State College, in cooperation with the Cox Broadcasting Corp., will offer a new programming course this month. In addition to formal classwork at the college, the course will consist of hands-on training at CBC's Data Processing Department.

The evening course, offered through Georgia State's School of Special Studies, will be limited to 60 students (20 in each of three classes). Computer training will be held on Saturdays at CBC.

calendar

Jan. 10-11, Washington, D.C. — "New Computer Assisted Concepts in Electro and Vector Cardiology." Contact: American College of Cardiology, 9650 Rockville Pike, Bethesda, Md. 20014.

Jan. 13-15, Washington, D.C. — Institute on Management and Technology in Printing and Publishing. Contact: The American University, Center for Technology & Administration, 3900 Wisconsin Ave., N.W., Washington, D.C. 20016.

Jan. 28-31, Ellenville, N.Y. — 1969 International Symposium on Information Theory. Contact: IEEE, 345 E. 47th St., New York, N.Y. 10017.

Feb. 13-14, Las Vegas, Nev. — Adaptive Management Conference. Contact: J. L. Dreyer, Adapsco, 420 Lexington Ave., New York, N.Y. 10017.

Mar. 24-26, Tallahassee, Fla. — 10th Meeting of VIM (Control Data 6000 Series Users). Contact: Dr. E. P. Miles, Jr., Prof. of Mathematics, Florida State University, Tallahassee.

ACM Calendar

Management Science

Feb. 5-6 Americana Hotel, New York.

Computer Selection and Evaluation

Jan. 30 Sheraton Chicago Hotel, Chicago.

Feb. 13 Marriott Twin Bridges Motor Hotel, Washington, D.C.

Feb. 17 Warwick Hotel, Philadelphia, Pa.

Mar. 13 Somerset Hotel, Boston.

Mar. 20 Hilton Inn, Tarrytown, N.Y.

Enrollment forms and further information are available from ACM Professional Development, 211 E. 43rd St., New York, N.Y. 10017.

EDP Language Program May Stop Dropouts

LOS ANGELES — "Acquiring the special language of digital computers may significantly reduce high school student dropout rates," theorizes B.J. Hoffman, a behavioral scientist.

"The theory that a knowledge of any second language, in this case computer programming, will broaden a student's outlook and motivate him to stay in school will soon be tested under scientifically controlled conditions," said Hoffman, who works for Scientific Data Systems.

SDS, aided by city, county, state, and university educators, will sponsor classes for approximately 100 junior and senior high school students from the Compton School District. The classes will introduce these students to the vocabulary and operation of digital computers and, theoretically, provide the students with an impetus to complete their education.

"Three groups of students are presently being selected for the pilot program," Hoffman said. "One of the groups will be comprised of students with special aptitudes, a second group will contain students with normal intelligence, and a third, the control group, will receive no training but will be studied as part of the overall program."

Based on his experience with the California Museum of Science and Industry, which co-sponsored a children's computer workshop with SDS last summer, Hoffman said, "I am confident that among the students who attend our classes the dropout rate will be reduced by 50% or more."



Moving Finger Writes

In this experimental Sylvania system, hand printed characters, written with an electronic ballpoint pen on an electronic tablet, are read by the computer. The display permits visual verification that the system had interpreted the characters accurately.

Polvino Heads Digitronics Users Association

Special to Computerworld

NEW ORLEANS, La. — Charles Polvino of American Cynamid Co. has been elected president of the Digitronics Users Association.

Other new officers include M. Jeffrey Birch, vice president; William Noyovitz, treasurer; and Morton Siegelbaum, secretary.

Burch and Siegelbaum were re-elected.

The association also voted to continue allowing nonusers of Digitronics equipment to attend seminars held by the association. The association is comprised of users of Digitronics data acquisition and communications equipment.

Computers Lost Face in the Elections

(Continued from Page 7)

them would be exposed by the delay, he contended.

But Phyllis Huggins, a computer industry commentator, noted that the industry, particularly IBM, would like to see written votes eliminated because of the problem of tabulating them by computer. This, coupled with a request that key countries be allowed to report earlier, would "lose our democracy," she quoted a poll inspector as saying.

B) Industry Ethics
A battle over the ethics of the Association for Computing Machinery broke out last summer when the ACM, during the IFIP conference, was accused of unethical practices relating to advertising in the ACM's own publications. ACM Executive Director J.D. Madden replied that the ACM was holding in abeyance all questions relating to ethics.

Questions were then raised as to whether the ethical guidelines, adopted for ACM members sometime ago, applied to the ACM and its employees. Next the ACM announced it would not arbitrate ethical disputes between its members.

The whole question of ethics may come up at the next ACM Council meeting as a result

discussions at the council meeting last month.

At present, it is not certain whether the ACM has a right to promulgate industry ethics. The organization may be a trade association as well as professional society. This would restrict it from any action in the area of ethics.

9) Computer Warranties

The degree to which a manufacturer is actually obligated to stand behind its claims was brought into focus last year.

In April a U.S. District Court found IBM liable for damages for breach of warranty during the settlement of the Food Center Wholesale Grocers, Inc. suit. This was the first such case that IBM had lost.

The main issue in this case was the court decision that the original tabulating equipment contract had actually been altered by later written and verbal discussions between the customer and IBM.

Then later in the year, as mentioned above, the Defense Department and the GSA informed computer manufacturers that they would be considered responsible for any and all statements and claims provided to procurement officials in conjunction with a procurement,

whether or not such information was contained in the purchase order.

The trend toward forcing the manufacturers to live up to statements made by their salesmen and representatives may be the source of future legal actions against the manufacturers, as well as a means of protecting the user from being misled.

10) The Mini-Computer

Last fall the industry was both amused and startled to hear the announcement of the new mini-computer from Viatron. It seems likely that the first emotion to disappear will be the amusement.

The system is for real. It works, if only in prototype. The system is a hard-wired program system, with only one program available at present. The system includes magnetic tape, video displays, a printing robot, and a keyboard device for data entry.

The system is almost ridiculously cheap (about \$39 per month for a normal configuration) and could put the Mini and PDP grocery on-line for less than it currently spends on bookkeeping.

The systems still are scheduled for delivery next summer, and Viatron reports it is having no current problems with manufacturing arrangements.

Push Button Lock Simplifies Security

NEW YORK — A new security lock for computer rooms and restricted areas is available.

The lock, called the Simplex, combines the features of combination locks with the ease of operation of pushbutton locks. The lock can be installed in doors, files, cabinets, and any other storage device with drawers or doors, according to the manufacturer, Simplex Lock Co.

The lock has been tested by companies across the country and has been approved, accord-



ing to the company, for use in Department of Defense closed or restricted areas for plants engaged in classified projects.

Tape cabinets, record cabinets, and other types of storage equipment are available with the new lock already installed. The combination can be changed as often as necessary for security, and can be opened very easily if the combination is known.

Combination possibilities include the use of more than one button simultaneously, as well as in sequence. From one to five buttons can be used for the combination. The lock lists for \$30. Simplex Lock Co., 150 Broadway, New York, N.Y. 10038.

Power System Monitor

A new power system monitor protects computers and EDP equipment from undetected power line fluctuation. It per-

New Products

ceives deviations from the specified computer requirements and provides audible and visual warn-



ing signals. A clock on the face of the monitor stops at the face of a malfunction and the event is permanently recorded on a four channel strip chart. Four models are available. Auroyal Manufacturing Co., 117 Harrison Ave., Roseland, N.Y. 07068.

Graphic Terminal

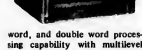
A new self-contained, desk top graphic terminal provides com-



plex graphics capability through use of a solid state data entry keyboard and visual displays. All elements required to communicate with a computer are housed within the T4002 console. System components are: display unit, terminal control, character generator, keyboard, and input/output interface. The screen is 6-1/2" by 8-3/4" and will accommodate up to 35 lines of alphanumeric characters with 80 symbols per line. Manual entry of data is through a solid state keyboard with full USASCII capability. Tektronix, Inc., P.O. Box 500, Beaverton, Ore. 97005.

Small Computer

A new digital computer, the DataMate 16, has a 4096 word, 10 microsecond memory expandable to 32,728 words. Byte-



word, and double word processing capability with multilevel indirect addressing are included. Standard peripherals are a Teletype, paper tape reader and punch, incremental magnetic tape, IBM compatible magnetic tape system, digital plotter, line printer, and rotating mass storage. A plug-in card is used to interface. The unit can be desk top or rack mounted. Price: \$13,900. DataMate Computer Systems, Big Springs, Texas.

Scan Converter

A new scan converter unit, Type 4501, converts informa-

tion written on a 5" storage display tube to composite video or modulated RF for viewing on large screen television monitors.



or receivers. The unit may be operated in a Store or Nonstore mode. Typical applications are computer graphics, remote data communications terminal, education, and training. Priced at \$2200, the scan converter comes in cabinet or rackmount. Tektronix Inc., P.O. Box 500, Beaverton, Ore. 97005.

Data Set

A new data set, Modem 4400/48AF, automatically equalizes dial-up phone lines for high speed data transmission and automatically equalizes to the transmission line. An indicator shows when a line is not suitable for data use. International Communications Corp., 7625 N.W. 36th Ave., Miami, Fla. 33147.

Input/Output System

A new input/output system, the Univac 1100 IOS, priced from \$185,000, has a main memory of 36 bit words and is designed for use with 1108 systems to service on-site peripheral equipment and remote terminals. Such functions as communications handling, card reading, card punching, and line printing are transferred to the IOS. Hardware tabling of communication interrupts and buffering are included. Delivery will begin in late 1969. Sperry Rand Corp., Univac Div., P.O. Box 8100, Philadelphia, Pa. 19101.

Calculator

A new electronic printing calculator, the Logos 328 priced at



\$1595, has built-in programs for solving percentages, square roots, and raising to powers, as well as the basic arithmetic functions. Six registers can be used interchangeably and three of the six are independently addressed from the keyboard. The unit will handle decimals from 0 to 15 places. Decimals are entered into the machine as they are read from the problem and answers print to the number of places selected and are rounded off if desired. Olbrecht Underwood Corp., 1 Park Ave., New York, N.Y. 10016.

Tape Spooler

A high speed tape spooler for use in numerical control and data processing applications contains a servo mechanized tape



tension system for trouble free handling of tape. A high speed rewind facility permits tape to be rewound at speeds of up to 180 ips in either direction. The unit is equipped with 8 inch NAB reels. Servo arms can be latched at the outer extremity to facilitate tape loading. Ferranti-Packard Electric Ltd., Electronics Div., Toronto 15, Ontario.

Wats Line Monitor

A device for measuring the amount of time used on Wats (Wide Area Telephone Service) lines is now available. The new unit, called the Watsline Monitor, provides information on the



number of calls made over each monitored line, and the total number of hours used on the line. The unit can be used to assess the effectiveness of patterned or unlimited installations, as well as a warning device for overtime rates. The unit sells for \$495 and carries a one year guarantee. Monitor Business Machines, Inc., Freeport, L.I., N.Y. 11520.

Analogy/Hybrid Interface

A standard analogy/hybrid interface has been developed to interface Electronic Associates' S50 desk top analogy/hybrid computer to Digital Equipment Corp.'s PDP-8. The new interface offers a low cost use of hybrid computation power for training and development of hybrid operating programs. There is also a related software package to facilitate the interface design. The software includes a full set of hybrid subroutines, allows the user to have control of the S50 for setup and checkout from the PDP-8 keyboard, and the ability to use the full set of diagnostics through the interface. Electronic Associates, 185 Monmouth Parkway, West Long Branch, N.J. 07764.

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A \$1 Billion Gift? Faces Begging

By L. Richard Caveney
Director, Government Marketing
Bryant Computer Products

I have one billion dollars, which the federal government refuses to accept. We now have a 10% surtax on individual income and Congress required a \$6 billion cut from federal programs as part of the surcharge act.

The present cutting approach applies restrictions across the board without regard for inefficiencies and waste. It is these latter problems which require an urgent call for understanding by the public.

"The greatest 'economy' is to be exacted from this country's research and development activities which account for about half the controllable part of the budget. R&D was reduced \$563 million in the President's 1967 budget—a whopping 35%. The cuts came not only from space and research facilities but from medical colleges at a time our nation faces a critical shortage of physicians. How can this type of retrenchment be called 'economical'? Present cuts also will diminish the ranks of future scientists and engineers.

What has a conservative businessman to worry about? Plenty! When basic research dries up, so does the source of new applied technology.

The cuts should be accompanied by the efficient management of existing men, money, and materials coupled with the rapid implementation of new ideas from within and without the federal establishment. The cuts also should be accom-

"I'll take that one," because they recognize a familiar manufacturer's name?

Congress the Watchdog

This problem is compounded by the fact that although Congress will not appropriate funds without providing for supervision of their disbursements, the individual member of Congress has come to feel insecure in his own technical knowledge and hesitates to "take on" the Air Force's "The Administrative Problem" requirement for contractual computer systems has been put to a more realistic time frame, he said, and the complete elimination of the requirement is far from the near future.

The Peripherals Manufacturer's Association, which held its presentation at the Fall Joint Computer Conference last month, should be formally organized in 1969. This, he said, will give more than 80 manufacturers a unified voice which will have more impact on legislation and on the Executive Branch.

And, he said, the new Republican administration hopefully will have a much more friendly attitude toward business problems and be more open to wants.

Establishment's Position

At modern science produces a revolutionary environment, which is part and parcel of the housing problems that beset the people of this nation, the bureaucratic position remains: there must be no outside review or control over the procurement practices of the federal government, and there must be no "third-party intervention" by any board or panel or expert on matters of federal policy regardless of how many lives and resources of any sort are involved and wasted. In short, all effective power must be reserved to "Big Brother," the federal establishment.

The starkly etched needs of our domestic society are being sacrificed to the emotional need of the upper echelons of government managers to be comfortable, because, as a presidential spokesman has written, to change "would require complete revision of our present concepts of . . . procurement."

Suggestion System

In an era of instant change, some federal employees hope to modify or alter the ways of federal procedures through the Federal Employee Suggestion Program. But there is no rebuttal if a suggestion is rejected. Letters of disapproval in his possession show a complete disregard for submitted facts and in general are nonresponsive to the suggestion's specifics.

For example, one of the government's largest computer users turned down an extraordinarily detailed and documented million dollar suggestion regarding a marketed computer tape drive with the comment, "We had already witnessed a demonstration of the tape unit of which you informed us. . . . There was no cost-effectiveness." The figures which showed a 33-1/2% increase in efficiency with a decrease of 29.7% in cost; in fact, no reference was made to any of the cost-effectiveness.

The Congress has an interest in the maximum utilization of appropriated funds. A staff member of the House Committee on Post Office and Civil Service said they "frequently" had government employees call regarding rejected suggestions, but they could do very little, as they had no personnel or funds for the purpose of evaluating rejected suggestions. He forwarded a copy of their May 16, 1968 report covering "examples of improved management" reported by the 26 largest departments and agencies in the federal government.

"Cost Cutting Tips"

One of the cost cutting tips, made by the General Services Administration, was as follows: Save on use of the character "B" on typewriters. In many instances this character is now imposed by typing the letter "O", backspacing and then adding the diagonal slash (/). These three

But Caveney Sees Progress

As 1968 closed, L. Richard Caveney, one of the loudest critics of federal procurement practices, said he believed the fight for change finally is showing.

"Since I testified before Congress in 1967, I have noticed an increased understanding of the peripheral manufacturer's position," he said. "The Air Force's 'The Administrative Problem' requirement for contractual computer systems has been put to a more realistic time frame, he said, and the complete elimination of the requirement is far from the near future.

The Peripherals Manufacturer's Association, which held its presentation at the Fall Joint Computer Conference last month, should be formally organized in 1969. This, he said, will give more than 80 manufacturers a unified voice which will have more impact on legislation and on the Executive Branch.

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steps are time consuming in instances where usage of the character is very frequent. The GSA has arranged that any standard typewriter can be ordered to include the character at a \$3 increase in cost.

While savings of this value were filtering about the GSA, through congressional committee to publication and distribution, several valid suggestions on ADP (aided by outside experts as bordering on a one billion dollar a year saving) are either turned down due to incompetent review or are not responded to at all. Manufacturers of computer peripheral equipment, such as magnetic tape transports, are attempting to get on GSA schedules (license to sell to the U.S. Government) and to create price competition. To state it another way, GSA is just another ridiculous obstacle placed in the procurement cycle. And yet the federal government loses the ability to reappropriate its resources toward its domestic tasks.

Air Force Savings

On page 6 of the publication the Air Force proudly proclaims its "standardization of Air Force base level automation" with projected six year "savings" of \$17,500,000 beginning in 1969. The Air Force hopes to accomplish this "with a standard electronic data processing equipment (EDPE) configuration." It does not mention that the Phase II contract initiated by the Air Force to IBM had to be renegotiated after the upset by major computer corporations and other groups, resulting in savings to the government of approximately \$50 million. The renegotiated winner will supply a minimum of about 130 computer systems, with each computer system having two or three \$200,000 large capacity memory storage units.

The report also does not mention that testimony given to the Congress in November, 1967, proved that for one typical \$900,000 government owned computer configuration, the use of independent manufacturers' peripheral devices would have reduced the purchase cost by about \$400,000. That is a 44% cost reduction. The Air Force's 130 EDPE minimal base configurations, could total at least another \$40 million in savings. Additional savings in floor space, spare parts, maintenance time, and manpower would have added substantially to these savings. Such savings would buy a tremendous amount of "system responsibility."

Since that testimony was published, no changes have been made in that procurement letter in which a vast amount of independent peripheral manufacturers' products are bid as individual units.

As an April 25, 1968 Bureau of the Budget letter explains: "To provide for direct bidding of magnetic tape units, or other computer system components, as separate pieces of equipment in all procurements would require complete revision of our

present concept of EDPE systems and procurement."

The Facts Be Danned

In other words, although expert written testimony has been given to a congressional committee, the problem is just too big to contemplate, and please-be gentlemen enough not to bring it up again because we are in the budget. But many trying to cut \$6 billion from needed programs to think of modifying our procedures to effect savings by cost avoidance.

Nor does the Air Force mention the fact that the Phase II contract may put a second computer at most Air Force bases. My understanding is that the existing Phase I Univac 1050s now handling supply activities will not be compatible with the Burroughs computers being acquired and so cannot act as a backup unit. Nor can they share the Phase II personnel and financial activities. Is the ground being laid for the integration of Phase I and II somewhere in the Pentagon at this moment?

According to the GSA, the Pentagon lost \$160 million dollars by acquiring new computer equipment even as computer equipment owned or leased stood idle. This idle computer time amounted to an additional loss of \$250 million dollars. Not a bad loss, only \$410 million. If government were rated by how much it wasted in tax dollars it would be the most efficient government in the world.

President Harry S. Truman stated when he signed into law H.R. 1366, which granted unprecedented freedom to the Executive Branch from specific procurement restrictions during peacetime, that this bill had a hidden danger, that the responsibility upon the Executive Branch, which includes the Defense Establishment, had been increased. The danger, he said, is that the national security, the speed and speed in procurement will lead to excessive padding of contracts by negotiation and undue reliance upon large concerns. This, he said, was not what he had in mind. In a sense, this law gives government a license to practice collusion and, if not collusion, stupidity at the taxpayer's expense.

President Truman have the foresight to put forth the first warning concerning the huge military-industrial complex which has been forged and nurtured by the military procurement law, H.R. 1366? About 1960, former President Dwight D. Eisenhower also warned the American people of such a merger. All the technological progress, the vast taxpayer's dollar and the lack of efficient management in government seems to support the fact that both former presidents were right. Congress must act expeditiously to place the proper controls upon the Executive Branch in order to provide for the proper funding for all programs and decrease the possibility of any such future fiscal crisis.

(Continued on Page 11) R.



R. Caveney

panied by a sharp reappraisal of procurement procedures.

Procurement realities, which imbue profit oriented organizations, have little force within the federal establishment. "Cost-effectiveness" is a dirty word, not a rigorous, penetrating method for effectively allocating resources. The problems in technical procurements are especially acute. In a day when an engineering education's relevance to burgeoning technology means far less than a decade ago, we have many government "managers" making decisions on major equipment procurements whose latest knowledge, and in some cases training, predate World War II. In the accelerated technology of today, the instrumentation of 20 years ago is useless; computers have only come into currency within the last 15 years; lasers, solid state physics, communications satellites, and large scale TV replays are examples of the changes that the immediate past has wrought. Can they evaluate engineering differences, or the complex interconnections that exist between existing equipment and the proposed purchases? Or do they simply say,

COMPUTERWORLD

SPECIAL SECTION

Section 2

January 1-8, 1969

Page 1A

CDC-IBM Suit Involves Many Issues Share, PL/I, Maintenance, IBM Salesman, Customer Employees Are All Mentioned

The Control Data complaint against IBM may well involve millions, perhaps even a billion dollars. However, this contest between the giants has many-sided issues which directly concern parts of the computer community. There are references to the IBM quota system, to customer employees, to computer languages, etc. These are brought out, together with some background, in the stories on the next two pages. In the pages following we are reprinting the original complaint as well as IBM's reply. In the individual stories, references to particular sections of the complaint are keyed in accordingly.

PL/I Development Discriminatory?

Joint Ventures by IBM And Customers Cited

In the complaint, Control Data claims that IBM has formed joint ventures with its customers and customer groups on a discriminatory basis, and has used its predominant position as a supplier of computer language developments, or even access to their achievements.

The entry, in paragraph 23 of the complaint, subsection M, page 8, appears to be a straight reference to the development of PL/I. PL/I started off as a committee set up by one of the IBM user groups, Share, which was interested in finding a successor to Fortran. Originally the name of the language being developed at the time was, indeed, Fortran VI.

After the first announcement of the System 360, which included a mysterious reference to "NPL," the committee was expanded and at one time included members from non-IBM computer firms. These were later dropped and the effort became purely one made up of IBM, Share, and Guide groups.

Subsequently, although there were manuals printed about the language, the specification changed constantly and this caused problems, even within IBM. The DOS PL/I, for instance, was built around the third edition of the PL/I specification manual, even though it was not ready until the fifth edition had been published. Later, restrictions were placed on the language specification manuals by IBM.

Recently some members of Share came to the opinion that IBM did have what they considered to be undue influence in the group's activities and, in a minority report on the alternatives to the Share/Guide merger, recommended a number of ways to modify this influence. In general, they suggested a reduction in the size of the organization to a more manageable structure rather than to increase the size as was being proposed by the executive committee which favored the Share/Guide merger.

Another point in the complaint is that joint ventures have been formed with customers as well as with customer groups. Although there is no allegation of conspiracy, this could cause ramifications because many IBM customers are large

enough to invite problems of antitrust in their own organizations.

Originally, a number of firms, such as General Electric, which were both computer manufacturers and users of IBM equipment, were very specific about the openness of the Share activities. However, recently Share has moved to restrict the distribution of much of its material through the use of copyright, and through restricting the distribution of copies of their meeting proceedings.



The console of the CDC 8600. Control Data contends that IBM actions damaged the market for this machine when it was first introduced by announcing the IBM 360/91.

Master Contracts And Their Effects

On page 10 of the complaint (22cc), there is reference to the use of master contracts for many customers. The complaint alleges that the use of such contracts lacks written particulars concerning the terms, specifications, prices, or manpower commitments made by the defendant, IBM, for a customer's subsequent computer procurements.

One illustration of these contracts was disclosed earlier this year in an action between Food Center Wholesale Grocers, Inc., (the plaintiff) and IBM. The food center had ordered a Ramac system in 1962. There were problems in the operation of the 305 RAMAC and the question of what constituted the contract between the two parties was argued in court.

The food center claimed that the contract, or agreement, between the parties was not embodied in any one document, conversation, or action, but was created as a result of many meetings and conversations. It said the actions of the parties were to be used to define the contract rather than scanty and incomplete documentation.

The plaintiff said that the terms of the contract included an agreement on the part of the food center to lease the Ramac from IBM for use in the food center's operation of its wholesale grocery warehouse. Ramac "was to perform certain accounting, administra-

tive, and record keeping functions electronically."

In its answer, IBM denied generally those allegations. In particular that denied covered the allegations that the agreement if any between the parties was entered into in or about September, 1962. The defendant takes the position that the primary contract between the parties was entered into September 20, 1954, in writing, a copy of which is attached to the answer and marked "A." One of the terms of that 1954 contract states as follows: "machines and devices, in addition to the above, or to replace any you may have in use, will be furnished to you under this agreement at the schedule of charges in effect on the date such machines or devices are installed ready and for your use."

Pursuant to that 1954 agreement, IBM received on or about May 28, 1962 a purchase order from Food Center in which Food Center ordered from the defendant a 305 RAMAC. That order was accepted sometime during the summer. Subsequently, IBM tried to meet and eventually did meet the data requested by Food Center for delivery and installation of the machine. Pursuant to the terms of the general 1954 contract, IBM agreed to furnish "its electronic accounting machine service comprising the use of its machines and devices listed below, instruction in the operation of the machines, and machine maintenance service." (emphasis added) The terms and conditions set forth in the remainder of the contract.

ARGUMENT

It is the defendant's contention that the contractual relations between the parties are governed by the 1954 contract pursuant to which various machines were ordered by the plaintiff over a period of years. The machine in question was ordered by the plaintiff on or about May 28, 1962. By the terms of the 1954 agreement plaintiff had a right to supplement or replace its original group of machines which were listed in the 1954 contract. The basic obligation of IBM, however, did not change, namely "to furnish its electronic accounting machine service comprising the use of its machines and devices listed below, instruction in the operation of machines, and machine maintenance service." The obligation of the plaintiff to pay rental for machines was fixed by the 1954 contract. IBM's obligations were defined and stated by the 1954 contract and consisted of an undertaking to supply the requested machines, to maintain them and to instruct the customer in their operation and use. It is IBM's contention that it was never part of its contractual obligation to program the RAMAC for the use of the plaintiff.

The contract does include a phrase which indicates that the machine supplied should be in accordance with IBM's published specifications. However, it is not clear what this actually comprises.

In this particular case, the jury gave a decision of breach of warranty and negligence by IBM, in favor of Food Center—but diminished Food Center's claim for breach of contract.

Software Lock-In Cited as Hindrance

On page 8, under K2, a lock-in involved in the use of single prices for hardware and software is claimed to have hindered the development of independent software companies. Software has become so important that a machine can really be said to be unusable unless the software is available. There have been individual

statements by IBMers that the cost of software to a customer could be calculated to be only about 2% of the cost of the computer and that not providing it would not lead to many economies. The actual cost of software development is not really known. Two years ago, in talking to a Share meeting, Thomas J.

Watson, Jr., chairman of IBM, revealed that IBM had badly underestimated the cost of 360 software and commented that he had asked two IBM executives just what it had been. The first said \$40 million, and the second said \$50 million.

The Association of Independent Software Companies in a position paper dated Nov. 22, gave a definition of the problem which ran like this:

Let's take a hypothetical example: Software Manufacturer "A" decides he can build a Cobol compiler for the 360 that will be 25% more efficient. "A" proceeds to build this product which employs some innovative concepts and expends one million dollars. The product performs as originally estimated. "A" advertises in the trade publications that it offers a Cobol compiler which is 25% more efficient than IBM's for only \$5000. "A" distributes literature and user manuals to prospective clients and runs demonstrations. He even installs a few systems. However, as word gets out

about this new system, the users put pressure on IBM to produce an improved system. IBM "reluctantly" agrees to do this. In building the new version some of "A's" principles are cited which were disclosed in the promotion of "A's" product. Since patent protection was not available to "A", he has no legal position to protect his investment in the inventive concepts that he developed.

So what's a lot of money. You may say that can't happen but a very close parallel to the situation described above happened with Digital and a Fortran Compiler. It happened to ADR with a system called ESI. It will continue to happen when the economies of the situation or the customer pressure require it. Software companies cannot base the existence of their business on the philosophy of the computer manufacturers.

It is interesting to note that the software companies felt that separate pricing of hardware and software did not solve the problem.

Sales Quotas Are Called Too Restrictive by CDC

The size of salesmen's quotas is generally an internal matter in a company, but in its complaint Control Data has also featured IBM's sales quotas.

The IBM quota system is described as so restrictive as to coerce its employees (see 23P, page 9 of the complaint). The reference appears to be to IBM's rather unusual quota system. This, like most such terms, based on points, credits, and debits. However, unlike many sales compensation plans where a salesman is debited quota points only if a customer fails to take ordered equipment, or discontinues use of the equipment, the IBM quota system is based on a 100% debit on the value of any equipment discontinued, even if new equipment replaces it.

The quota arrangements cover three pages of IBM's data processing sales compensation plan. They are quite complicated, and some IBM teams keep one person as an in-house "advisor" on the best time to place orders so as to obtain the maximum commission. Essentially, however, the result of the quota arrangements is that a sales representative's

commission can be hurt very substantially if any of the accounts in his area discontinues use of IBM equipment without purchasing or renting more expensive equipment from IBM. This is true no matter how long the equipment being replaced has been in use.

In its response to Control Data, IBM mentions the large reduction in the cost of processing which, it says, has decreased to 1/40 of what it was a few years ago. However, there are normally no arrangements made to reflect this fact in working out quota debits on order equipment that is being replaced.

There are a number of ways in which a branch manager can effectively eliminate some of the worst effects of having experimental equipment in his area. By assigning particular representatives to accounts where quota sales performance is not part of the salary structure, it is often possible to clear out a number of installations (which would otherwise provide problems) without impacting the representative concerned.

Breach of Consent Decree Seen In IBM Time Sharing Service

In 1952 the United States filed a civil action claiming that IBM, which then owned approximately 90% of all tabulating systems in the United States, had violated the Sherman Act by monopolizing and attempting to monopolize interstate and foreign trade. After four years the litigation culminated, in 1956, in a consent decree through which IBM agreed in effect not to engage in the service bureau business except as a separate corporation.

In the Control Data complaint, page 10, reference is made to this decree and it is claimed that the recent entry of IBM into the time sharing business was in breach of this decree. IBM originally started its time sharing operation (Call/360 Basic, etc.) under its data centers but two months ago moved them to the Service Bureau Corp. It was believed at that time that this move had occurred because of the pressure put upon the corporation by people like Joan Van Horn of VIP Systems.

The key portion of the 1956 decree appears to be the definition of a service bureau business. This is defined in the decree as being "the provision of tabulating and/or electronic data processing machines of accounting, statistical, and mathematical information and reports and others on a fee basis." IBM facility allows a user to prepare his own reports without the intervention of any service bureau personnel, so is not, in fact, a service bureau operation.

Now Or Not?

In this service the Control Data complaint makes no reference to CDC's feelings on a breach of the decree or whether the behavior complained of has now actually ceased.

One point has been brought out which

may affect this (also on page 10) where the complaint refers to the alleged joint marketing efforts between IBM and the Service Bureau Corp. which, the complaint says, has been used as a vehicle to lock customers in and to grant discriminatory price concessions. No direct joining of these two operations is mentioned in the complaint.

Section 2 of the Sherman Antitrust Act provides:

"Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be punished by fine not exceeding fifty thousand dollars, or by imprisonment not exceeding one year, or by both said punishments, in the discretion of the court."

This is the section most relied on in the Control Data complaint. The act does not say that a monopoly is prohibited, but says that "to monopolize" is to transgress the law. The word "monopolize" is broad and not defined in the act. The problem before the court will be one of statutory law. Any economic, social, and political philosophies will be only marginally relevant.

There are three potential offenses in Section 2 — to monopolize, to attempt to monopolize, and to combine or conspire with others to monopolize.

While it is only somewhat difficult to define what is needed to have a monopoly, the phrase "to attempt to monopolize" is much harder to define.



Control Data's new 7600, the largest, fastest computer in the world, is CDC's latest bid to capture more of the large scale computer market.

How the Sherman Act Describes Antitrust Violations

The basis comes from common law, which existed before the Sherman Antitrust Act, and relates to any attempt to restrain trade, an action considered to be both unwelcome and also an inevitable result of a monopoly.

Different Companies, Different Rates

As a result, many actions which a company can perform quite legally cannot be taken by a firm capable through these acts of effectively forming a monopoly. A businessman, reading through some of the complaints, might well feel that some of the conduct complained of is normal good business practice. For instance, fighting for an order, even when he has heard that the order has gone to a competitor; obtaining patents and patent rights; using "letters of intent" to encourage a customer to place a firm order. These appear to be, and often are, ordinary business practices. He is quite correct — but this may be irrelevant.

Under the law, it is possible that these same actions, when taken by giant companies, might be found to be a serious "attempt to monopolize," and therefore be forbidden under the act.

Foreign Commerce

One point of the law is that it applies to interstate commerce as well as foreign

commerce. The federal government has the power to regulate trade with other countries and on occasion has done so. The aim of this regulation is to provide other American companies with access to foreign markets rather than to protect the protection of United States law to foreign competitors. So much is this so that if the foreign competition falls into a cartel type operation, specific exemptions have been granted for American firms to do likewise, despite the Sherman Act.

The Control Data systems have sold fairly well around the world. Even so, there are many areas where IBM through its world trade organization has almost complete control. The Near East oil refineries probably have larger shares for such companies as General Electric in France, Honeywell in Scotland, etc. However, it is possible that the foreign governments would insist in equivalent privileges being given their own computer companies.

The effects of any change ordered in the policy of IBM in foreign countries presumably would be aimed in the first place at securing larger shares for such companies as General Electric in France, Honeywell in Scotland, etc. However, it is possible that the foreign governments would insist in equivalent privileges being given their own computer companies. The overall impact of this case might then well be to extend some protection to non-American manufacturers, though the Sherman Antitrust Act is simply designed to protect American companies.

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SUPPLEMENTS

**This is the first in a series of Special Supplements which
Computerworld will provide for its readers in the future.**

Some of these supplements, like this one, will be devoted to the details and ramifications of important news events.

Others, to be provided at regular intervals, will be in-depth presentations on particular areas of data processing. The first, to be published in February, will cover computer environments, including air conditioning, special flooring, backup power supplies, and physical storage facilities.

\$1 Billion 'Gift' Refused By Government: Caveney

(Continued from Page 10)

The solution is not more administration, but more efficient management practices. As John Kenneth Galbraith pointed out in the *New Industrial State*, one can favor technological bigness and oppose administrative bigness without inconsistency. In fact, advanced technology tends to streamline activities. It also makes them less subject to bureaucratic whims.

What the federal government needs are technically oriented managers. People with an understanding of technology, who are able to understand the technical language and concepts of the various sciences. Only a properly trained management oriented individual can properly manage technical programs vital to this nation's economic and social well-being. The ability and will to manage is at least as important as the technical background. These people cannot be like the postmaster quoted when asked how he managed his operation: "I don't manage it, I simply administer it."

Center for Technology

I propose the establishment of a Center for Technology in the Legislative Branch or in the White House. Recently developed evidence on the M-16, F-111, and Air Force Phase II computer contracts suggests that such a center could more than pay its own way by reducing procurement waste of tax dollars. The center director would report directly to the leaders of the House and Senate or to the President.

This center would have two objectives:

(1) Act as a court of appeal for government employees who have had their technical suggestion turned down by the chain of command within the Executive Branch and (2) to allow suggestions from individual taxpayers and the academic and business communities to be given proper attention.

Such a center would put a brake on present procurement practices for major technological purchases. It would provide sophisticated analysis of agency positions and present them to the Congress and the President in layman's terms. It would be an expert objective audiovisual unit for Congress and the President that would act as a counterbalance to the tables full of agency witnesses congressmen now see.

Congress would still appropriate funds, but the Executive Branch could not make a contract award for major technological items without all proposals and contract award recommendations being first reviewed by the center and explained to the appropriate committee of Congress or the President.

We must all demand an affirmative and constructive spirit regarding institutional changes within Government. We must also encourage the development of those attributes within the governmental service that will steadily push the frontier of knowledge farther into the area marked unknown while managing in a manner that will evoke the best from those that labor at all levels of Government.

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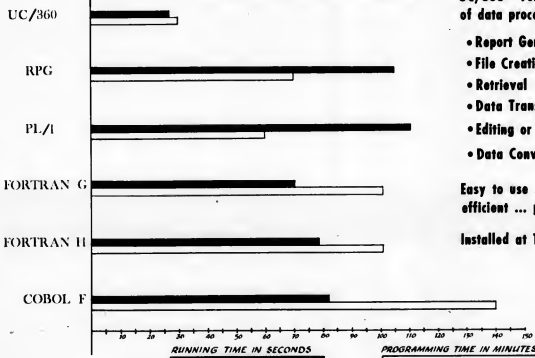
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'Basic' Adopted for Call/360, But With Several Changes

By Peter L. Briggs
Of the CW Technical Staff

When IBM announced that it had decided to use Basic as the primary language in its new Call/360 time sharing system, it accepted the reality of Basic's popularity and usefulness as a major time sharing language.

It was believed to be the first time that IBM had adopted for a major time sharing language, in which it had not helped to design or develop.

Language Modifications

In adapting Basic to Call/360, IBM made a number of changes during implementation. The user who is familiar with Basic will no doubt find some unexpected differences.

The differences lie in input/output, optional keywords and the implementation limitations on certain facilities. Arithmetic problems, as usual, crop up now and then. The final, and most significant, difference lies in the documentation. Basic has always been intended to be easy to learn. This is no longer completely true.

Input/Output

In the I/O area, IBM has introduced a new feature to Basic. This feature, the "PRINT USING n," brings Basic back to the Fortran input conventions and shows no sign of being otherwise necessary in the language. IBM has also neglected to implement the "Mat" instructions. These instructions allow the user to input and output data directly to and from matrices without looping through the subscripts. This looping requires much more processing time and much more user coding than the Mat instructions. With a limit on the number of statements permitted in a Basic program, this prevents problems.

Keywords

IBM has made it optional to use certain keywords. The "Let" keyword in assignment statements is an excellent example. It certainly does reduce coding for the user, and doesn't interfere too seriously with the naturalness of the language. It does, however, introduce the usual compatibility problems. In a case where a program has been written on the Call/360 system, stored on paper tape, and later run on the Dartmouth system, the absence of the Let keyword will prevent the program from running, due to diagnostics.

Matrix Manipulation

Another problem with the changes in matrix manipulation appears when a matrix is de-



Peter Briggs, using an IBM 2741 terminal at Computerworld, inputs a program in Basic to a remote time sharing service.

fined. In this case it appears that IBM has chosen the more natural course, rather than Dartmouth. In Dartmouth Basic, array subscripts are started from zero. In Call/360 they start from one. In other words, if you digression an array as "DIM (5,6)," under Call/360 the array will contain 30 elements and under Dartmouth it will contain 42 elements. This is a problem of both compatibility and naturalness. For most commercial users, the use of zero as a number is most unlikely; it is much more natural to start counting from one.

Variables

Whenever double precision floating point (real) variables are used, there is always the problem time of comparisons. IBM has several problems with comparing fields in double precision format. The extra bits which are used in double precision are not used in the single precision variables, but they are compared. Results have been unpredictable in the past, and there is no sign that they have solved the problem.

Documentation

The final, and highly important, area of difference is in the documentation. The principle purpose of Basic has always been to make it simple for the non-programmer to learn the language while actually using the terminal. This becomes very difficult when the IBM Call/360 Basic Handbook (2200-0043-1) is spread over so many pages with no little information content and so much blank space. It is all well and good to leave room for expansion, but beyond a certain point it confuses the reader rather than helps him. The information is there in general, it is

just very difficult to follow the logic of the language without some sort of formal education. The Basic handbook is not a self-teaching guide, it is a pure reference manual. This problem can be solved by the additional study of Mario Farina's *Programming in Basic*, the standard text on Basic. It is necessary to watch out for the areas of difference, though, because Farina had never heard of Call/360 when he wrote the book.

In general, the command language has a few drawbacks, mostly in the area of conciseness. With a very few exceptions, abbreviating the system commands in Call/360 is not permitted. Therefore, the user must do more typing, spend more time connected, and remember more complicated command formats.

Allowing for the noted drawbacks, IBM has managed to retain the general orientation of Basic and not make it too difficult for the user to access his system.

Basic, the language created at Dartmouth College by Professors John G. Kemeny and Thomas E. Kurtz under a National Science Foundation grant, has become the new standard for time sharing system languages. General Electric has made a great deal of use of the language in their various time sharing systems, and Dartmouth College has continued to expand its capabilities. Other manufacturers have adopted Basic into their repertory, in cases where it has been shown that ease of learning is a major factor in popularity. The general philosophy of Basic has been to keep it flexible, simple, and very easy to learn.

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The package, used for time series analysis and random processes' data reduction, was developed by Measurement Analysis Corp., a Digitek subsidiary. It is currently available for industrial use through a leasing plan, and will continue to be available on this basis from the developer. CDC has obtained exclusive data center rights to the package for an amount, estimated to be in excess of \$100,000, spread over the next three years.

According to James R. Dunlap, Digitek's president, "The agreement represents the first time a major computer company has made a single, advanced software system of applications programs available on such a large scale." Plans call for making the system available worldwide during 1969 at all CDC Data Centers. CDC hopes that the extensive availability of the system will facilitate standardization and acceptance of results among vari-

ous CDC customers at different locations.

New Graphics Program

ANAHEIM, Calif. — A system to produce network drawings of Critical Path Method (CPM) project schedules has been announced by California Computer Products.

The program, designated Auto-net (Automatic Network Display) is compatible with most currently used CPM programs, according to the manufacturer, and can be used with CalComp's line of digital plotting equipment.

The program accepts output from a standard CPM computer program and converts the output into commands for the plotter. The program can be used on-line or it can prepare tapes for off-line use.

PDP/1130 Assembler

RYE, N.Y. — A new program to assemble programs for Digital Equipment's line of PDP/8 and PDP/9 computers is now available for the IBM 1130.

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New Literature

Data Processing, Vol. XIII, a 371 page hardbound book, contains management and technical material presented at the DPMA 1968 International Data Processing Conference recently held in Washington, D.C. Subject material is grouped in 11 chapters and fully illustrated. Cost is \$9.95 to DPMA members, \$11.95 to others, plus a \$2.25 handling and postage charge. *Data Processing Management Association*, 505 Busse Highway, Park Ridge, Ill. 60068.

Potential users of aerospace management methods, private and public, are surveyed in a new publication by Nasa, "Applications of Systems Analysis Models" was written under contract for Nasa and issued to enable industry and other government agencies to benefit from Nasa's experience and findings. The publication discusses the adaptation and application of methods to problems that confront management and deals with use of modern techniques for solving them. Nasa SP-5048, \$3.50, Sept. of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

A brochure describing a new approach to magnetic tape cleaning, "A Systems Approach to Tape Maintenance" includes cleaning with the Mark II tape cleaner, purchasing methods with the MP461 and utilizing a Cobol oriented management reporting system. Data Devices Inc., 186-60 Topham Ave., Tarrytown, N.Y. 10590.

A new brochure notes seven common sources of computer input/output control problems: the Xerox CFF printer, Xerox Corp., Xerox Sq., Rochester, N.Y. 14663.

A new illustrated brochure describes the CC-30 communications station and its applications. A graphic design illustrates possible configurations. Control and function characters of the CC-301 are defined. Computer Communications, Inc., 701 W. Manchester Blvd., Inglewood, Calif. 90801.

Actual data communications systems are detailed in two new use line brochures. One brochure describes how a modern data communications network of teleprinter terminals speeds data processing. The second brochure tells how a nationwide terminal network enables one company to mail invoices the day after "BOS and the industry histories are presented in typical magazine feature article form. Write Dept. SP-80, Teletype Corp., 5555 Touhy Ave., Skokie, Ill. 60076.

Included in the quarterly magazine, *Interface 16*, is an article entitled "BOS and the industry in Perspective." Copies may be obtained from the Sales Promotion Dept., Scientific Data Systems Corp., 5555 Touhy Ave., Skokie, Ill. 60076.

A 48 page article, No. 700123, illustrates and describes 11 sales and marketing time sharing models. It contains detailed specifications, prices, and typical configurations. Available from: Time Laboratories, 836 North St., Tewksbury, Mass. 01876.

McCall Information Opens a \$10 Million Data Center

FULLERTON, Calif. — McCall Information Services Co., a division of McCall Corp., New York, has opened a commercial computer service facility here equipped with four IBM computers and related equipment valued at \$10 million. The center was formally dedicated by David Mahoney, president of Norton Simon, Inc., of which McCall is a subsidiary.

Mr. Mahoney said that the facilities might be used to form a data bank of information using the files and resources of the three McCall magazines, university, and research sources.

Max L. Mueller, group vice president, will head the new facility. Other staff members are Philip A. Cramer, western regional manager, and Thomas



R. Sheehan, assistant manager; Thomas J. Getzinger, controller; and Paul Valeri, marketing manager.

Data & Information Opens Ohio Office

PRINCETON, N.J. — Data & Information Products, Inc., an Appleton, Wis. based company, has opened an office at 21330 Center Ridge Rd., Cleveland, to market proprietary software. Lee Jablonski has been

appointed office manager.

AIM Opens Eastern Office

ENCINO, Calif. — AIM, a software company, has opened an eastern regional office at 17 Sherwood Place, Greenwich, Conn. The new office will be managed by Fred Flannell.

URS Opens Seattle Office

SAN MATEO, Calif. — URS Systems Corp., a computer soft-

ware company, has opened a new office at 2909 Third Ave., Seattle, to serve accounts in the Pacific northwest. Heading the office is Delbert Brown.

FMC Corp. to Construct 36,700 Sq. Ft. Building

SAN JOSE, Calif. — FMC Corp. plans to construct a new building in the Airport Industrial Park, Santa Clara, to house the company's Management Information Systems staff and computer center, as well as the FMC Machinery international operations. The project is scheduled for completion in seven months.

Robins Forms New Division

FLUSHING, N.Y. — Robins Industries Corp. has set up a separate division to handle its electronic, audio, and data processing products. The new division will be headed by Jack Friedland, a vice president of the company.

Computicket Corp. Moves Into Larger Quarters

NEW YORK — Computicket Corp. has moved into the Paramount Theatre Bldg., 1501 Broadway. The new quarters will house two IBM 4040 computers. Computicket is a subsidiary of Computer Sciences Corp.

Photo Magnetic Systems Forms Subsidiary

CHICAGO — Photo Magnetic Systems, Inc. has opened a subsidiary, Computer Telephone Co. of Chicago, Inc., at 111 W. Washington St. Officers of the new corporation are John J. Secan, president and treasurer; William J. Harte, secretary; and Stanley J. Bahler, vice president.

General Automation Opens Ten Sales Offices

ORANGE, Calif. — General Automation, Inc. has announced the opening of 10 sales offices to expand marketing of its general purpose computers. The company's national sales force will be controlled from five regional offices.

orders and installations

Northwestern Life Insurance Co., Seattle, Wash., has installed a Univac 9300 computer system for processing ordinary and special risk insurance, statistical reporting and calculation of commissions, preparation of premium notices, and agency reporting.

The Hunter Valley County Council, Sydney, Australia, an electric utility company, has ordered an NCR Century 100 computer consisting of a 16,000 character memory, paper tape reader, printer, and two dual disk units. Intended applications are office billing, inventory control, payroll, and cost and expenditure accounting.

Denny's, Troy, N.Y., a department store, has installed a Univac 9200 computer system to be used for sales reports, accounts payable and receivable, and buyer's summaries.

Schwepges Ltd., London, has ordered an ICL 4-50 computer system to replace an ICL KDF9 presently in use, as well as IBM and NCR peripheral equipment. Applications intended are marketing and selling, stock and distribution control, production planning, and cost and financial accounting.

Y & S Candies, Inc., Brooklyn, N.Y., has installed a Brooklyn 100 computer system for sales forecasting, labor and production analysis, inventory control, billing, accounts receivable, and payroll.

Chitenden & Eastman Co., Burlington, Iowa, has ordered a Univac 9200 computer system to replace tabulating equipment currently in use. Typical applications will be billing, invoicing, and sales analysis. Delivery is scheduled for this month.

The James E. Crum Coca-Cola Bottling Plants, Inc., Richmond, Va., has ordered a Univac 9400 computer system to service its 63,000 retail outlets. Original applications will include route accounting and control, route statistics, and general administration. Delivery is scheduled for November.

Six of the Province of Quebec's new government operated commercial colleges have ordered a NCR Century 100 computer. The first delivery is scheduled this month to the Collège D'Enseignement Général et Professionnel. The systems will be used for EDP instruction in languages, programming, and systems analysis.



The Chas. H. Lilly Co., Portland, Ore., a manufacturer and distributor of fertilizers and weed control products, has ordered a Univac 9200 computer system to replace punched card equipment presently in use. Delivery is scheduled for this spring.

IBM has installed a North Atlantic Industries multi-channel computer interface subsystem in its Federal Systems Division, Oswego, N.Y., where it will be used in a simulation laboratory to study and evaluate prototype avionics systems. One of the first applications will be to check out parts of the A7 D/B avionics package. Other applications range from deep space to anti-submarine warfare programs.

New OTC Quotation Service Will Speed Data to Brokers

NEW YORK—An automated over-the-counter market quotation service, which will speed information to brokers and others, will be built and operated by Bunker-Ramo Corp. under a seven year contract with the National Association of Securities Dealers.

The NASD, a national organization of some 3800 broker-dealer securities firms, headquartered in Washington, D.C., is charged with the responsibility of regulating the unlisted securities markets and its members and this same that do business in this area.

Scheduled for 1970

Called Nasdaq, the computer network for OTC quotations is scheduled to become operational in late 1970. It will initially provide quotations on about 1500 OTC stock issues through the network of CRT terminals currently in offices of brokers, retail traders, and market makers in all parts of the country. A market maker is a securities firm

that maintains an inventory in particular stocks and continuously stands ready to buy and sell in these issues. Nasdaq will be capable of handling as many as 20,000 different OTC issues. "The implementation of the system will provide the quantity and quality of OTC trading information that has been long sought for the investing public," said NASD President Richard B. Walbert.

Walbert pointed out that in addition to relieving many of the present burdens connected with supplying over-the-counter quotations information, newspaper bid and ask prices would be substantially more current and for the first time the public will be able to have volume figures and stock indices on the OTC market.

Three Level System

The OTC bid and ask quotations will be entered into the central computers throughout each trading day by hundreds of market makers, designated Level

III subscribers, using special key-sets. The computers will record the entry of each quote on each issue by each market maker. A key-set user (broker/dealer firm) can retrieve a list of all market makers in that issue and the current bid and asked quote of each one of them.

Similar key-sets will be provided to hundreds of retail trading firms executing orders for the public. These firms, Level II subscribers, will be able to interrogate the computer but will not be able to enter data into the system.

It is expected that the most widely used level of service, termed Level I, will supply a representative quote to approximately 30,000 desktop units now in use in the sales departments of brokerage offices to obtain listed prices. The use of a representative quote on a particular issue will insure the reliability of the price information received by investors and prevent erroneous quotes. A representative quote is the median of all



Anthony A. Barnett, Bunker-Ramo vice president, demonstrates a prototype terminal for the Nasdaq system for, left to right, Phil E. Perrow, NASD board chairman; E.L. Schmidt, Bunker-Ramo vice president and general manager; and Richard B. Walbert, NASD president.

actual market maker quotes in that stock entered through Level III equipment.

Bunker-Ramo will proceed with the design and construction of a new computer center to be located at Trumbull, Conn. and five other communication centers to be located in major cities and tied to the main computer center.

In addition to supplying quotes to those involved in trading, the Nasdaq system will furnish the NASD itself with summary reports of OTC activity and will supply end-of-day reports to newspapers and wire services.

A byproduct of the system will be an hourly updated OTC market index.

Twelve Frieden Flexwriters with 80 column card reader. Contact, Henry Miller, Middletown, Connecticut, 347-6958 for additional information.

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CAI Project Goes to SDC

SANTA MONICA, Calif. — The Air Force Electronic Systems Div. has contracted with System Development Corp. to develop a computer based training program for the Phase II Base Level Data Automation System. The training system will provide on the job instruction for military users, operators, and managers. Lessee designers will construct material in a real-time, interactive mode at remote communications terminals tied to a Burroughs B3500 computer system. A trainee will have the option of selecting material to be viewed during the teaching session by lesson, subject, and purpose of the session. Text material and

CONTRACTS

questions are presented to the trainee at the remote terminal and his responses recorded and evaluated by the program.

Army Gives Work to CSC

LOS ANGELES — The Army Sentinel System Command, Huntsville, Ala., has awarded a \$723,000 contract to Computer Sciences Corp. to assist in the development of a computer based information system which will aid in the deployment of the Sentinel Ballistic Missile Defense

System. Work will be done at CSC's Huntsville Operations Center and at the Sentinel System Command headquarters. CSC will perform the operational design of the information system, develop financial and technical information for users, and write the computer programs to make the system operational, using the Cogen system.

DDS Wins PMS Award

COLLEGE PARK, Md. — Photo Magnetic Systems, Inc. has awarded a \$100,000 contract to Delta Data Systems, Inc. to develop time sharing applications for credit checking, order entry, and general accounting.

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- Minimum order 13 weeks (prepaid); less than 13 weeks rate is \$14.00 per column inch; maximum ad size 7 column inches; sold only in even inches (no fractions).**
- Format —**
- Headline
 - Description of package use and configuration.
 - Price: (Optional)
 - Contact information
 - No special borders, no reverses
 - Logos allowed

SOFTWARE WANTED

- Purpose —**
- To provide at low cost a place where a user or software house can make known to the computer community a general or specific software need.
- Rate Information —**
- Open rate \$18.20 per column inch (1-13/16" wide).
 - Minimum size 1 inch.
 - No maximum size.
 - Minimum number of insertions — 1.
 - Lineage discounts apply to large ads for long runs.
- Format —**
- Unspecified
 - Borders allowed
 - Headlines allowed
 - Reverses allowed
 - Logos allowed

TIME FOR SALE

- Purpose —**
- To provide at low cost a regionalized listing of available computer and machine time, time-sharing services, etc.
- Rate Information —**
- Rates per column inch 1-13/16" wide:
 - 1 Col. inch 14.00 per week
 - 2 Col. inches 28.00 per week
 - 3 Col. inches 35.00 per week
 - 4 Col. inches 42.00 per week
- Minimum order 13 weeks (prepaid); less than 13 weeks rate is \$14.00 per column inch; maximum ad size 4 column inches; sold only in even inches (no fractions).**
- Format —**
- Headline
 - Information about system or service.
 - Price: (Optional)
 - Contact information
 - No special borders, no reverses
 - Logos allowed

BUY SELL SWAP

- Purpose —**
- To provide at low cost a general market place for equipment, systems, services, supplies and the like for the computer community.
- Rate Information —**
- Open rate \$18.20 per column inch (1-13/16" wide).
 - Minimum size 1 inch
 - No maximum size
 - Minimum number of insertions — 1.
 - Lineage discounts apply to large ads for long n.s.
- Format —**
- Unspecified
 - Borders allowed
 - Headlines allowed
 - Reverses allowed
 - Logos allowed

Recruiting Requires Delicate Handling

By Sam Wilder

Vice President
Career Consultants, Inc.

Probably the most competitive personnel market in the country today is for engineers and Electronic Engineers. They are oriented people. The demand for qualified personnel in most professional disciplines is increasing steadily, and the competition for those persons available is un-

precedented. There just are not enough persons with the required disciplines available, and as a result, a situation has developed that, if it were not so serious, it would be ludicrous. Right qualified people are playing a very profitable game of musical chairs, and this situation is tending toward all echelons of professional disciplines. While many plans have been

conceived by companies and professional recruiting firms to attempt to alleviate this situation, no company as yet seems to have put together a complete program that has been organized, planned, and executed with sufficient aplomb to have any great overall effect on the personnel market.

Knowing Where to Look

All individuals in the personnel recruiting field today are or should be cognizant of the geographical areas in which specific disciplines are most likely to be located. In many instances this type of operation has been carried on with the sophistication of a market research study, especially in those cases where highly specialized disciplines are required.

Knowing where to look, however, is of little value if a well planned, organized, and coordinated program has not been developed to effectively recruit the desired personnel. Every step of such a program from the method of establishing first contact to the proferring of the offer of equal importance and has to be handled accordingly. Many methods are available to contact applicants within any given geographical area, and they vary depending upon company, circumstance, and conscience. Regardless of methods, however, the problems of planning, coordinating, and communications are rather parial.

Recruiting Out of Town

For example, if a company or recruiting firm has a recruiting team traveling on a national basis it is not just a problem of supporting this team in the field with local newspaper and trade journal advertising, direct mail, and the names of any potential applicants in the area. The problem lies in the method in which the prospective applicants recruited are processed and handled once the basic information is received by the home office.

Of course, one of the most efficient and effective methods is to have personnel traveling with the team who have the authority to make on the spot offer. The advantages of such an operation are obvious.

Timing is Critical

If this method is not feasible, however, fast, efficient processing and distribution of resumes and decisions as to interview or no interview are of vital importance because time in this respect is no longer a commodity of the employer.

Once it has been determined that there is interest in a resume, the process of contacting, setting up a mutually convenient time for plant interviews, and arranging transportation and lodging should proceed per prearranged plan. Many potential applicants become disenchanted with companies because of slipshod handling of these basic arrangements. Above all, any person who is scheduled to talk to an applicant should be briefed on the individual's experience and background, and the position for which he is being considered.

As soon after the interview as possible, the applicant should be notified as to whether there is interest or not. To allow an applicant just to hang for two or three weeks after an interview is almost certain to cause him to lose interest in a company, and in speaking with friends and acquaintances his comments can adversely affect the opinions of other potential applicants.

Follow-Up is Important

Even though every aspect of the recruiting effort and the in-plant interview has been handled with dispatch, the overall effort cannot stop at this point, or again potential applicants will be lost.

Establishment of a firm timetable for a buy or no-buy decision once an applicant has been interviewed is essential, and the applicant should never leave an interview without being given a definite date by which he can expect to be notified, and this date must be kept.

If possible, prior to the interview, a general letter about the company with a brochure and, if feasible, information on the

local community, should be sent to the applicant. If time does not permit this prior to the interview, it certainly should be included in the letter acknowledging the interview.

Applicant Is the Buyer

Exceedingly well organized and planned programs as outlined will meet with varying degrees of success depending upon the forcefulness with which they are pursued. The one element that is overlooked in so many programs is the psychological approach or attitude of the individuals at every management level involved in the recruiting effort.

Anyone who has any contact with a prospective applicant should realize that today the applicant is the buyer and the company the seller. All too seldom are the full ramifications of this fact exhibited in dealing with applicants, and to achieve the maximum results desired, regardless of all other elements, any recruiting program has to be endowed with the seller's approach—above all, common courtesy and respect for individual dignity.

Acquisitions

Brandon Applied Systems Forms New Company

NEW YORK — Ennis Brandon Computer Services, Inc. — a new company formed by Brandon Applied Systems, Inc. and Ennis Business Forms, Inc. — has been incorporated with authorized capital of \$5 million initially — composed of five million shares of common stock of \$1 par value.

The new company will be headquartered in Dallas, according to Dick H. Brandon, president of Brandon Applied Systems, Inc.

Dearborn Acquires Muchowich Marine

CHICAGO — Dearborn Computer Corp. announced an expansion of its operations in the offshore oil industry through the signing of an agreement to acquire Muchowich Marine Service, Inc., Freeport, Texas, for an undisclosed amount of Dearborn Computer stock.

The acquisition will be treated on a pooling of interest basis. According to Arthur Weiss, Dearborn president, Muchowich Marine will be operated as a wholly owned subsidiary.

Planning Research Acquires H.B. Maynard

NEW YORK — Planning Research Corp. announced that its shareholders had voted approval of the acquisition of H.B. Maynard & Co., a Pittsburgh based management consulting firm. The merger agreement involves an initial payment by Planning Research of 245,000 shares of its common stock on a pre-split basis. Maynard can receive up to 245,000 additional shares of common stock to be determined by its earnings over the next four years.

University Computing Acquires Hunter Assoc.

DALLAS — I-Hunter Associates, Inc., a consulting engineering firm, has merged with University Computing Co., according to a joint announcement by Homer Hunter, president of Hunter and Sam Wyly, president of UCC.

Terms of the merger were not disclosed, but involved an exchange of University Computing stock for the privately held shares and assets of Hunter.

Informatics to Buy 70% of Dataplan

SHERMAN OAKS, Calif. — The Interpol Group of Companies and Informatics, Inc. have agreed in principle to the joint operation of Dataplan, Inc. as a supplier of computer services in the marketing communications field.

Informatics will purchase a 70% interest in Dataplan, an Interpol Group subsidiary, for \$1,600,000 cash. Interpol retains 30% ownership. Dataplan will continue to be operated in New York as a separate company.

According to Dr. Walter F. Buser, Informatics' president, the transaction is subject to final agreement and approval by the boards of directors of both companies.

Louis Berger Inc. Acquired By Public in Stock Swap
GREAT NECK, N.Y. — Leasco Data Processing Equipment Corp. says it has acquired all the outstanding stock of Louis Berger Inc. in a stock swap. The deal, for \$7.5 million in Leasco common stock.

Leasco is a privately owned firm that performs engineering, planning, and architectural services.

PROFESSIONAL ANNOUNCEMENTS



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